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PRESENT DAY TREND OF SURGICAL ANESTHESIA*

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Of the two greatest advances in surgery in the past hundred years the introduction of anesthesia occupies probably an equal place with that of asepsis. Prior to the introduction of chloroform in 1831, of ether in 1842, and nitrous oxide in 1884, only the crudest attempts at anesthesia were practiced. These included such usages as chilling, the application of tourniquets, giving of opium, and administration of alcohol by mouth. Surgery for centuries was of necessity cruel and hurried, limited in its application, and incomplete in its accomplishment. Since the middle of the nineteenth century the hypodermic needle has been invented and cocaine introduced in 1879. The introduction of machines for administering nitrous oxide came in 1890. The first local anesthetic, cocaine, was brought out in 1879. Its application as a local anesthetic by injection was worked out by Halstead on himself in 1885. The much less toxic substance, novocain, was discovered by Einhorn in 1905, and has practically displaced cocaine as a local injection anesthetic. There have been great improvements in the various types of machines for the administration of the gases since the first machine used in 1890, so that at the present time as many as four or five gases and ether may be available off the same machine. Intratracheal anesthesia was introduced by Elsberg in 1909, rectal ether anesthesia by Gwathmay in 1913, and synergistic anesthesia by him also in 1923. Until the introduction of ethylene by Lockhard in 1923, nitrous oxide, the only inorganic member of the anesthetic group, was the only gas anesthetic available. Since attention was called to ethylene, experiments with acetylene have proven that it is also a satisfactory anesthetic. In the past two years two additional members have been added to the available anesthetic group, sodium amytal (sodium-iso-amylethyl-barbiturate), and avertin or E-107 (tribromethyl alcohol). The introduction of carbon dioxide for stimulation of the respiratory center during the administration of the gases has greatly facilitated their use as it is an effective means of combating the anoxemia often seen in their administration. Medicine being an incomplete science the search for the ideal anesthetic is sure to continue.

The history of our present day anesthetics reads like a romance. Chloroform was discovered by three different individuals in different parts of the world simultaneously. The anesthetic properties of ether were discovered accidentally when it was found that those under its influence were insensitive to pain. Crawford W. Long, sensing its possibilities as an anesthetic, first used it as such in surgery.

The first user of nitrous oxide for anesthesia, committed suicide following the death of a patient upon whom nitrous oxide had been used.

The physician first introducing spinal anesthesia, did so with a solution of cocaine accidentally, in the course of an operative procedure. Not realizing the importance of his observation, it remained for others to develop the use of spinal anesthesia, clinically.

The anesthetic qualities of ethylene became known following the investigation as to why flowers in certain hot-houses heated by gas, drooped instead of growing properly. These investigations disclosed the causative agent to be ethylene. This led to experiments upon animals which proved it to be an effective anesthetic and from this point it was but a step to its application to human surgery. The kindred gas, acetylene, was also found to have similar anesthetic properties.

The barbiturates were experimented with, upon animals, for four or five years before first being used upon man by Zer-

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fas and McCallum two years ago, and avertin was first given by mouth in the treatment of whooping-cough and later given by rectum for the same purpose, before its anesthetic properties were discovered.

For many years chloroform was a much more widely used anesthetic than at present, but due to its marked toxic action upon the circulatory system and the liver, it has been practically discarded in many parts of the world. For a long time it was maintained that it did not carry the same danger in childbirth as in other types of cases. This has been definitely disproved. Upon the Continent and the British Isles it is used alone or in combination with alcohol and ether in what is known as the A. C. E. mixture. According to press reports, the recent operations performed upon King George of England were done under chloroform anesthesia.

Ether, at the present day is still the most widely used and the most universally applicable general anesthetic. It produces an almost ideal anesthesia, and lends itself to several forms of practical administration, open drop, colonic, as ether vapor in conjunction with various gases, and as ether vapor, alone, in intratracheal anesthesia. It is, however, a definite lung irritant, has definite toxic effect upon the liver, and is a vaso-constrictor in the kidneys. Its administration is, in a high percentage of cases, followed by nausea and depression extending over hours and sometimes days. Its inhalation is unpleasant to the patient, and as induction requires several minutes, these factors form a decided obstacle to its use. Recent experiments have shown that its administration causes a reversal of the potassium and calcium index of the blood, and this in itself may account for some of the bad effects of ether as an anesthetic. In such cases it would seem that Fischer's solution would be better to use than normal saline.

The use of nitrous oxide, except for very short anesthesias, was never very popular until oxygen was administered simultaneously. Since the various machines for the use of gases have been developed and carbon dioxide has been added as a respiratory stimulant, the troublesome anoxemia has been markedly reduced.

With the introduction of ethylene, the use of nitrous oxide was greatly curtailed, but since it has become widely known that ethylene is an explosive gas, there is an increasing tendency to the use of nitrous oxide as it is non-explosive.

With ethylene, as with nitrous oxide, the period of induction is brief, and associated with very little unpleasantness to the patient. The return to consciousness after the use of ether gas is immediate. There is generally a period of nausea in the brief time of recovery. Occasionally this will last for several hours. It is almost never serious. Neither of these gases have any demonstratable effect upon the lungs, liver or kidneys. There is evidently a greater tendency to bleed under ethylene anesthesia than under any other anesthetics used at present. Both gases have the disadvantage of producing insufficient muscular reaction. This is especially a handicap in abdominal surgery. Patients stand prolonged operative procedures under ethylene remarkably well, and practically no perspiring is noticed.

Acetylene has almost identical anesthetic properties with ethylene. Its administration is followed by a moderate rise in blood pressure. It is being tried out in various places in both this country and abroad and seems especially adapted to thoracic surgery. It is explosive, as is ethylene, and there is considerable difficulty in obtaining the pure gas at the present time.

The latest innovation in the use of the gases is the placing of a cannister containing soda-lime between the mask and the re-breathing bag for the removal of CO_2. By this means the amount of gas consumed is reduced approximately nine-tenths. The patient requires a little closer watching. The economy is obvious.

With the introduction of novocain, with its markedly reduced toxicity over that of cocaine, the latter has been almost completely replaced as an injection anesthetic. However, cocaine is a far superior anesthetic for surface application. During and following the World War there was a distinct extension of the use of local anesthesia in all of its applications—conduction, field-block, infiltration and spinal. The use of local anesthesia is far more exacting upon the surgeon than that of the general anesthetics. Its comprehensive use presupposes a rather intimate knowledge of the peripheral nervous system and of the anatomy and functions of the autonomic system. The method of application varies with the pathological conditions

present and the anatomy of the part operated upon. At times considerable ingenuity and maneuvering have to be resorted to. All this represents quite a departure from the usual operative procedures under a general anesthesia. Gentleness and an unhurried technique are paramount. As a consequence, it takes considerable experience for even an experienced surgeon trained to operate under a general anesthesia to become adept in its use under all conditions in which it is indicated.

Local anesthesia, exclusive of spinal, is the safest anesthesia that we have and many conditions presenting severe risks under any form of general anesthesia, can be operated with comparative safety by this means. A high percentage of minor surgery should be done under local anesthesia, as the expense, inconvenience and morbidity of the general anesthetics can be done away with. In the past decade, many hospitals and clinics are doing from thirty-five to ninety percent of their surgery under this form of anesthesia. At the present time, in the largest general hospital in Oklahoma, in which none but adults are treated, more than ninety percent of all surgical procedures are performed under some form of local anesthesia. The reduction of morbidity particularly, is remarkable, and the cases require a minimum of nursing care.

Within the past four years there has been a noticeable re-awakening of interest in spinal anesthesia. This has been brought about by general interest in local procedures, by increased knowledge of the physiology of the sympathetic nervous system, by the introduction of novocain solutions with decreased diffusibility that have a specific gravity less than or greater than that of spinal fluid, the accumulation of data which show this to be a safe anesthetic when used with understanding and proper recognition of its contra-indications and by the introduction of ephedrine sulphate. Its use produces ideal conditions for operations below the diaphragm. This much is certain, that no surgeon should use spinal anesthesia unless he understands all the physiologic phenomena involved, and has a properly trained operating team to combat untoward reactions should they result. It is not an anesthetic to be used casually and the user must be able to estimate the circulatory resiliency of his patient.

Sodium amytal (sodium-iso-amylethyl-barbiturate) since its introduction has been having a thorough investigation in many places as a general anesthetic. Some surgeons are quite enthusiastic over it, while the enthusiasm of others is not so pronounced. From the standpoint of the patient it is a pleasant anesthetic. Its introduction is intravenous in aquous solution. The patient goes to sleep quietly without any disagreeable sensation and is in a somnolent state for twelve to thirty-six hours afterward depending upon the individual and the amount of drug used. There is seldom any post-operative nausea, and they have passed through the chief period of post-operative pain before they are sufficiently awake to suffer. On the other hand, there is considerable variability of the amount of anesthesia obtained and relaxation is incomplete as a general rule. As a consequence, local or inhalation anesthetics have to be used in addition. This is a valid objection in abdominal surgery. It in no way limits shock and there is a tendency in debilitated cases to develop pulmonary oedema. These patients require close attention until they are completely conscious as there is occasionally a period of excitement approximating delirium during the hours that the hypnotic effect is passing off. The present indications are that sodium amytal as a general anesthetic will have a definite but limited field and that its chief use will be that of a basal anesthetic, some other agent — one of the gases, local or ether — being necessary in addition for sufficient relaxation. Very little is known at present as to its physio-chemical actions in the body except that it is apparently non-toxic to the kidneys and liver and is not a respiratory irritant. Smaller doses of amytal or luminal are being used for pre-operative hypnosis and as a means of lessening the spasmodic effects of novocain sometimes seen. By the use of the barbiturates the body can stand three or four times the ordinary dose of novocain without ill effect.

Practically contemporaneous with sodium amytal, avertin, (tribromethyl alcohol), was introduced abroad. Particularly within the last year it is being used in this country. It may be given intravenously or per rectum. The latter method is the one of choice. These patients become unconscious without unpleasant sensations in about ten minutes following an anesthetic dose into the rectum, and do not regain

consciousness for about eight hours. It is not very soluble in water and the temperature must be around forty degrees centigrade. If raised to forty-five degrees centigrade or above, it is decomposed into dibromacetaldehyde which is very irritating to the mucous membrane of the bowel. It is detoxicated in the body by combination with glycuronic acid in the liver and is excreted by the kidneys, hence marked renal disease and hepatic disease may be regarded as contra-indications to the use of the drug, as the mechanism of detoxication and excretion may be deranged. The chief dangers are circulatory disturbances characterized by fall in blood pressure and injury to the respiratory center. Carbon dioxide is contraindicated as the respiratory center does not respond to its use and instead may be completely suffocated. The fall in blood pressure must be combated by peripheral stimulation with ephedrin or adrenalin. No antidote is known at present, consequently the technique must be accurate. Like sodium amytal it seldom gives sufficient relaxation and must also be best considered a basal anesthetic to be supplemented by something else. It would seem to be indicated chiefly in surgery about the face, neck and head.

Many terms referring to anesthesia have come into use in the last two decades, twilight sleep, anoci-association, synergystic anesthesia, sequence anesthesia and balanced anesthesis. All are expressive and denote different ideas. Another might be added—selective anesthesia—as surgical anesthesia is fast resolving itself into the selection of the anesthetic best fitted to the individual case.

Combinations of anesthetics are often necessary, for mechanical and psychic reasons. The result of the introduction of the newer agents and their accessories, has been a marked diminution in mortality and morbidity. But their use brings to the surgeon an increased responsibility as in most places he is the one who must make the choice, and usually administers or has administered under his directions, the agents that are not inhalation anesthetics. It must be remembered that in the intravenous, intraspinal and rectal anesthesias definite quantities of the drug are administered and none can be taken away, therefore great care should be exercised that an overdose is not given. The inhalation anesthetics, on the other hand, can be varied to any extent.

The surgeon desiring to make use of all of the anesthetics now available must study the action of each independently. Furthermore, the use of most of them should be confined to institutions. Ether, in spite of its drawbacks, is the safest anesthetic in casual hands, as there is very little danger of any immediate ill effects. Even a novice can give a fairly good ether anesthesia. With the other forms of anesthesia the ill effects are usually immediate and may be fatal, unless their use, dosage and reactions are well understood.

SOME DONT'S IN EYE, EAR, NOSE AND THROAT WORK*

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When Doctor Thompson asked me to give this address representing the Eye, Ear, Nose and Throat Section, I accepted it for one main reason.

I have wanted for several years to call to the atention of the general medical profession of this State the evils of the practice of giving patients cocaine solution to use in their eyes at home. All busy oculists have from one to several cases each year, where many times more damage was done to the eye by cocaine than by the original condition for which the cocaine was given.

It is probably most often given for slight abrasions of the cornea or for slight wounds after the removal of imbedded foreign bodies. In either case a small piece of epithelium was removed from the cornea, which, as you know, exposes the most sensitive nerves of the body. A little cocoaine relieves the pain temporarily. Often the cocaine was used during the removal of the foreign body, which was certainly wise and proper. But after the effects are gone the lid brushes over the corneal wound and it soon begins to hurt, the patient complains and often asks for some of that medicine you put in his eye. It is given to him and he is told to use it every 3 to 6 hours. What happens? The cocaine soon softens the epithelium around the little wound and it begins to peel. That uncovers more sensitive nerves, makes more pain, and the patient puts in more cocaine. This of course causes more epithelial softening, more peeling and

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more pain and we have a vicious circle. This sometimes goes on until the whole cornea is denuded of epithelium.

The unprotected cornea, like any tissue which loses its skin or mucous membrane covering, is very easily infected and an infected corneal ulcer perhaps involving the whole corneal surface may develop. Infected ulcers mean scars. Scars over the center of the cornea mean defective vision and if the scar involves the entire surface of the cornea there will be complete loss of useful vision. So, trivial conditions, from the use of a cocaine solution plus infection, may end in a lost eye.

After the removal of a foreign body from the eye the instillation of a little bland oil or better still a mild antiseptic ointment like 2% iodoform, and a bandage will protect it from the winking eyelid and from infection. The epithelium will regenerate in 24 to 48 hours in the great majority of cases. Occasionally, it is necessary to put both eyes at rest with bandages for 24 hours, to obtain relief from pain. But that even is much better than giving the patient cocaine to use and so endangering his future vision.

If a small wound becomes infected where we do not have the continued use of cocaine solution, the scar will be limited to the size of the wound unless it is a very virulent infection. Then, unless the scar is directly over the center of the cornea there will be no practical loss of vision.

In ulcers of the cornea from any cause the continued use of cocaine will often cause the same damage as described above.

In the deeper inflammations of the eye cocaine will not relieve the pain so it is not used as much as in the corneal infections.

Do not give patients cocaine solutions to use in their eyes at home under any consideration. I cannot conceive of a condition where this is justifiable. If the pain cannot be relieved by bandage, bland ointment and rest, it will be much safer and better to give this patient opiates. For if the eye condition is one that will not be relieved, except by the patient using cocaine at home, you have a condition that should be in the hands of an oculist.

We are often asked by the general men what class of eye injuries or diseases, are safe for them to care for and which ones they should immediately send to an oculist. That is a very hard question to answer. It depends on the man. Some general men have an excellent knowledge of eye diseases, others very little. There is no question whatever, but that the general man with an average knowledge of eye diseases can take care of most of the minor conditions.

Two things he should not try to handle. One is glaucoma which often goes on to destruction, even though managed by the knowledge and skill of the best oculists.

I think all practitioners practicing in a town where there is not a good oculist should thoroughly acquaint themselves with the symptoms of both acute and chronic glaucoma as found in any standard text book. Then if a diagnosis is made or there is even a strong probability of a diagnosis of glaucoma, it should be sent to an oculist.

The other eye condition which should be immediately turned to an oculist is the perforating eye injury, either with a foreign body retained in the eyeball, or where the injury involves the ciliary body (or danger zone) without a retained foreign body. The danger zone is the 1-4 inch surrounding the limbus, or outer border of the cornea. Injuries in this region usually involve the ciliary body and often bring on the plastic form of iridocyclitis, which is the exciting condition that causes sympathetic ophthalmia in the other eye. That again is a condition which taxes all the knowledge of a good oculist to determine how long it is safe to retain the injured eye. There is nothing more sad than to see an injured blind eye retained so long that the good eye is lost by sympathetic trouble. Perforating injuries that do not wound the ciliary body are not often dangerous to the other eye. These may often very safely be treated by the general man. Many of them, however, end with loss or much defect of vision. An eye with a retained intraocular foreign body is another large problem for a trained oculist. Most of such eyes will be lost but a per cent may be saved by proper care.

Another condition that is often mismanaged by general men is fractures of the nose. The bony frame work of the nose as you remember is very thin. When fractured it is very easy for the broken bones to override each other and allow the nose to be depressed, sunken or displaced laterally.

The effort is often made to raise the

depressed fragments by packing the nose with gauze or cotton. This fails in most all cases. It may be necessary in some cases after the fracture is reduced to put a light packing inside the nose to hold the fragments in place. But these fragments must be reduced before there is any chance whatever of an intra-nasal packing being of value. Excepting that it occasionally may be necessary to stop hemorrhage.

The same principle of reducing an overriding fracture in the bones of the nasal frame work must be used as it is used in reducing fractures any place. Namely, sufficient extension to allow these overriding bones to resume their normal position

We use a thin piece of metal with a handle. The end going into the nose shaped much like the handle of a scalpel, only a little thicker. I often used the handle of a knife wrapped with a little cotton to make it a little heavier and the blade wrapped with a larger piece of cotton to use as a handle, before I had this special instrument. After anesthetizing the nose well with cocaine, in adults, or under a general anesthetic in children, the above instrument is introduced into the nose with the right hand, using the left to palpate and mold the nose externally. Force is made upward at right angles to the bridge of the nose. Sufficient force is necessary to allow the overriding bones to be put in place. It often takes enough force to raise the patient's head from the table to get the edges of the bones past each other. This force must be straight upward from the under side of the bridge of the nose, most of it of course in the region of the fracture. After being reduced the bones will often stay in place and result in a perfect nose without anything further being done.

However, there is always great danger of a very slight trauma again displacing these fragments, so they should be protected. I use a form, made to fit each case, cut from a thin strip of copper, held on with adhesive strips. This form should not put any pressure on the top of the bridge of the nose. It may be necessary for it to be pressed against the side of the nose so as to act as a splint. As stated above it is also often necessary to put a plug high up inside to act as an inside splint. Many substances are used for such a pack. We use gauze sprinkled with subnitrate of bismuth and generally covered with an exceedingly thin layer of rubber. A proper reduction of the fracture followed by even a small amount of care in protecting and holding the fragments in place will usually result in a good straight nose.

To emphasize a few of these don'ts.

If you are not an oculist:

1st. Do not try to treat perforating injuries of the eyeball through the danger zone or with a retained foreign body.

2nd. Do not treat glaucoma if you can get it to an oculist.

3rd. Do not try to reduce fractures of bones of the framework of the nose by intranasal packing.

4th. The thing I especially want to emphasize and do not want you to forget if you forget all else I have said, is: *Do not give a patient a solution of cocaine to use in their eyes at home under any condition whatever.*

PSYCHIATRY IN MEDICINE*

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I have never yet been able to quite understand that out of our several thousand members, many of them real orators, why I, the least qualified of all should be called upon for an oration on an important occasion of this kind; however, I felt it would give me an opportunity of presenting to our worthy profession some ideas of a better understanding of psychiatry in medicine.

I know many of our members today can very well recall the time in this new State of ours when we had no such thing as an organized profession of medical men, say nothing of the absence of hospitals of any sort or character. You will pardon me if I leave out of consideration all other classes of sick folks except the mentally sick for the moment because I know more of these kind of sick people.

Not until 1895, had there been any attempt to hospitalize our mental cases except as they were sent to a private institution at Jacksonville, Illinois.

During territorial days we scarcely had a place worthy of the name of a hospital for mental cases, but today, thanks to our

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taxpayers, I believe we can point with considerable pride to the fact that we have real hospitals for our mental cases, places where people are sent and where a real attempt is made to get the patient well and if not completely so at least get him back far enough that he can again become a partial breadwinner, but we are yet far from the "rainbows end." It is true we have made wonderful progress, but here the danger lies if we are going to be satisfied to just send our patients to our State hospitals for mental disorders and let it stop at that, then medicine to that extent is a failure. All too often do we, who have the management of these hospitals, see you send your patient down and then seem to lose all interest. Not so with your other sick people. You go with them as you should, but call up the next day and the next and so on, but all too often do we see that sick father or mother sent down in the hands of an officer, practically no medical history accompanying, when if the family physician, or a nurse would come along how different would be the story, what a different impression it would make on the patient, how much better chance for recovery. It has been, as many of you know, the very hardest thing in the world to get our own profession to accept whole heartedly psychiatry as a real part of medicine. Psychiatry is not a new, nor is it a separate branch of medicine. The noble minded Phillip Pinel (1745-1826), it was he who stood high in medicine as the first to treat the insane in a humane manner. At the risk of his own life and liberty he initiated the reforms of taking off their chains, placing them in hospitals under lenient physicians and doing away with abuse of drugging and blood letting to which they were subjected. In this regard he is the real founder of modern "open-door" school of psychiatry. His Traite Medico-Philosoph Alienation Mental (1803). Heinroths's book on Insanity (1818) and John Conolly on the Treatment of the Insane without Mechanical Restraint (1856). So psychiatry in medicine is not new, neither can we any more consider the psychologically sick now differing from that of other sick people. I don't know but just some how the mentally sick man has never been given a square deal by us as physicians. I think, however, this is excusable on the grounds that for so many, many years the psychological man was never considered by our medical school and, in some instances, yet left out of consideration altogether, but the time has come when things are going to be different. I believe the time is here now, as some one has said, when for the next fifty years medicine will have more to say about the psychologically sick man than all other sorts of sick folks.

Now what do we as medical men of Oklahoma think about it? You perhaps are more or less familiar with the already over crowded condition of our hospitals. Scarcely a vacant bed, the demand for admission so great that we are twenty-five percent over crowded. Last year we received at Norman, 937 patients and before this year ends another thousand to account for and the same condition prevailing in the other two like institutions of our State.

The mental patients in State hospitals per 100,000 population increased from 63.7 per cent in 1880, to 221.4 in 1928. This is more than a threefold increase. Now some one may be prepared to say that at this rate of increase the whole world will in a few years become insane, but not so. It is true insanity is slightly on the increase, but not alarmingly so, but how do we account for the threefold increase in our hospitals? We will try to tell you briefly, it is largely due to the fact that we are modernizing our hospitals along the lines of other hospitals and the people are finding it out and therefore more ready to accept of the benefits of our hospitals.

Now all this leads up to another very vital medical consideration, just what is to become of the proposition. I don't know how much longer the taxpayers are going to carry the load. We can't build fast enough even if the taxpayers were able to put up enough money. It seems we must keep up our schools, we must not neglect the normal, the last legislature appropriated better than three million for the care of its mentally sick, and yet far from an adequate amount. Now what is the solution? I think New Jersey has just about hit at the solution, and it is what many of us have been advocating, I think we are fast coming to it. Now the New Jersey medical profession is ready to accept her mental cases in the same light and manner as other sick folks. What are they doing? It is this: they are preparing their hospitals all over the state, municipal, county, state and private, to accept mental cases, not in a wholesale manner, but intelligently going about it, and the thing I can't see is why it has not been

done long ago. The only hindrance has been ourselves that when a mental case is presented, get him off to the "'asylum," he might kill some one, it would be dangerous to try to keep him in our already well regulated local hospitals.

I see coming into our State hospitals any day and every day case after case that should and could be taken care of and successfully treated and restored to his home without ever having to go through the ordeal of a court action. Your city and private hospitals have every facility in the world for a correct diagnosis and treatment. This I know would be out of consideration for some, but what about that toxic case; that case of pellagra and a host of others I could mention? The reason it has not been done and the only reason, can be laid at the door of our medical education. This thought leads to another suggestion, and I know if President Bizzell and Dean Long were here tonight they would welcome what I am about to say because I know they are in sympathy with it and it is this, just why is it we do not have right along with the other departments of our State University Hospital, a psychopathic department? The authorities are anxious for it and if the medical profession of this State want it they can have it. Here in this wonderful institution, with its highly technical equipment and strong faculty, you can see what an advantage to this class of sick people it would be, there they could go in the quiet of the day without a sheriff or policeman at their heel, go there for a scientific examination and treatment.

There again all interns would service this ward as they are required to do in other departments of medicine, these men would go out as familiar with psychiatry as other branches of medicine. This arrangement would by no means take the all important place of our present State hospitals, not at all. You can see, I'm sure, already, but when you are told that we have more mental cases in our State hospitals today than you have in all other hospitals of the State combined, I again say I believe the time is here now when we must consider the mentally sick as we do other sick folk.

Can you conceive of any sound medical reason why a mental case should not receive care at the hands of our medical profession and hospitals as other people, I don't believe you can.

I am not unmindful of the fact that in dealing with this great problem of the proper care and consideration of our mental cases, it is one that not only concerns us as medical men, but on the other hand, we are all taxpayers as well, and from this latter let us see where we are. As previously stated, the last legislature of this State appropriated a sum equalling more than three million dollars. That sounds like at lot of money, and it is, and some one here might ask, as I have many times before, when and where is it going to end, and my very satisfying answer is never. This thing of mental diseases is going to travel right along at the same pace and speed as before. Oh, some may say let's try sterilization. I did not want to say anything about sterilization, but I feel I must because the thing is coming up all the time, every time a legislature comes around some well meaning man introduces a bill to try to enact a law whereby all the insane and criminals are to be sterilized, thinking perhaps that would be the solution. And you can't much blame the legislature if that would solve all the human ills, but we as medical men know very well that it will not. If you were to ask me as I have been many times, what I thought of the idea of sterilization, I would say well and good enough in certain very selective cases, but as a wholesale proposition I am not in favor of it. In the first place, I would not know where to begin, and so long as the Great Ruler of the Universe continues to make us in the future as He has in the past, we will show the better part of wisdom to go very slow on this matter. We are not wise enough; our vision is yet too limited in the field of medical science. It is not scientific; it is not good medicine; it is not humane.

Then I don't know if we would be one whit better off if the whole field of mental disorders could be swept from the face of the earth. If growth is to continue, we must feed it with human sacrifice, if by the wave of the magic wand the whole path of man could be made smooth, nothing to hinder him in his rapid onward sweep, then what? Growth would cease. So I think we should not regard the small amount of money we spend in lifting up the sick, a burden, while on the other hand, it should appeal to us as a privilege, a means of growth. I do not want any one to go away from here conveying the idea that I am not heartily in favor of any scientific medical way of preventing disease, certainly I am, but to do it means

human sacrifice as well as money, and I am prouder every day that I am a member of a body of men who, when the occasion demands, are not only ready to give of their means, but as in the past, lay their bodies on the altar of sacrifice for their fellowman, if by so doing brings to our race better methods of the alleviation of pain and disease.

I do hope that every one here will go home with a more encouraging outlook on mental disease. The problems of our mental hospitals are your problems and you should know more about the workings of our hospitals. I think I can see a new day in medicine, I know that the time is not far distant when your mental cases will be looked upon in the same sympathetic way as we do all other cases. Of course, we will always have need for our State hospitals for mental disorders, and they will always be crowded in spite of the fact that thirty-five per cent make very definite recovery and never return again, and if we were not so crowded for the lack of room and more money and men to do with them, a very much larger percentage would get well. Then again a very large percentage of those who do not make complete recovery do get well enough to go home and live in fair comfort and again help, at least in a small way, in the family earnings.

But you will say you have pictured to us a rather dark future, you say there is nothing in sight to cut short the numbers; you are opposed to sterilization as a remedy, but then you know how we drove from our shores the plague, yellow fever and smallpox. We are all familiar with the works of that great physician, Lord Lister, how he looked upon the great mortality resulting from surgical pests as septicemia, pyemia, erysipelas, tetanus and hospital gangrene; how he went about clearing the field of surgery. He, like others, did it by the application of hard scientific medical facts, not by a fly-by-night popular idea here today and gone tomorrow.

I believe that just as soon as we as physicians are willing to accept psychiatry as a real and fundamental part of medicine we will then, and not until then, begin to cut down on the mortality of mental disorders, as we have other diseases. I believe we can do but little by legislating; human behavior has not yet been controlled by that means, though we all well know what education can and has done for the human race. It took the world many, many centuries to throw from its feet the chain of ignorance and superstition, and it seems it was but yesterday when our unfortunate insane were liberated from those awful hands of superstition and darkness and through the open windows of human intelligence the warm sympathetic and healing rays of medicine allowed to enter.

We are making progress. We must not become discouraged, things for the better are happening every day, we have already seen brought from that far off shore an olive branch, and ere long a New World's discovery will be proclaimed and if some morning we wake up to the fact that perhaps one of our loved ones is approaching a mental breakdown, and if it comes let us be prepared to meet it as a medical problem as we do other medical problems and with the same intelligent manner of treatment.

I do not feel like leaving this subject without going further into some of the educational future which I think we as medical men are due our people, some things in the field of mental hygiene. The day I hope is not far distant when we will have on the faculty of our State schools of higher education, a full time psychiatrist. This suggestion is not new. Harvard, Yale, University of California, University of Chicago, and any number of private educational institutions have this arrangement, and in every instance it is working to the greatest advantage in the world, it is helping in so many, many ways. Not long since in talking with one of these men I was told that in his particular school every young man and woman entering was passed upon by the psychiatrist. It would be useless for me to attempt to go into detail, explain some of its advantages, they are all to well known, and from these schools it would be carried into our public schools and what a difference it would make. Then our teachers would be able to better understand certain behavior disorders in children, when it is yet time to do something about it. We who have to do with our State hospitals see all too many young boys and girls coming to us when it is too late.

We could go on and on, but must not, though as a parting observation when it is impossible to say all I would like in speaking of mental hygiene, let us say to our father and mother, be honest with

your children, give them a clean, healthy body. Heredity yes, but most important of all a clean, healthy environment, early responsibility, not burdensome, but honest endeavor. We know how the gunsmith goes rather to the hill top for his timber where the wood fiber has had the test of the storm, rather than to the green valley, beside the still brook. It takes responsibility not only to perfect us as human beings, but so must nations be saved.

And last, but not least, let us hope that the day may speedily come when we will have in all the larger communities of our State a Child's Guidance Clinic, not a place where a few people gather to read papers, make talks, etc., but the most important place where the children can be brought for careful scientific study, where if they have defects, it may be found out in time to do something about it. Now all this can only be taken as a suggestion, and without the utmost and hearty cooperation of our physicians can a movement of this kind be worked out. Let us realize if we can that no community is sufficiently safeguarded without a correllating mental hygiene clinic. I am almost persuaded to say that it is equally as essential to public health and welfare as our isolation wards for infectious and contagious diseases.

THE SIGNIFICANCE OF CERTAIN PHYSIOLOGIC FACTS IN SURGERY OF THE ABDOMEN*

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We are proud of the accomplishments of surgery during the past generation. Surgery has reached an epoch today in which so many things can be accomplished that were not done in years gone by that we justly feel very boastful of the achievements of surgery.

We have many recognized cases today in which the operation was beautifully performed, yet the patient died. The larger portion of our mortality today comes from conditions which were not recognized at the time of examination and diagnosis. We have largely conquered the once dreaded shock and hemorrhage that used to claim so many of our patients. As a result, the majority of our patients who die following an operation die with some obscure toxic symptoms for which we are often unable to give an explanation.

Let me go back for just a few minutes into the history of surgery. First there was a long blank and a total absence of science. But even in the early days some surgery was done and done fairly well from what we can learn. Early in the history of Egypt trephine operations were being done. Long after the birth of Christ came the introduction of true science. It is amazing to think how long it was before we were willing to admit that we must study the whole body with which we have to work. Dissection was not practiced for a number of years and not until then did we begin to know anything about human anatomy. But surgery did not reach true science for a long time. We must also remember that in the earlier days before anesthetics were possible most operations which had to be done in the presence of pain had to be done very speedily. The surgeon of that period had to be familiar with anatomy and had to do his work exactly and with speed. Along with the study of human anatomy came the introduction of modern science, and it became possible to use the various tests which now aid in making a diagnosis.

It was found that by keeping the wounds clean and free from contamination and infection many things could be accomplished which hitherto had been impossible. Therefore many cavities and many regions began to be explored which had been unknown at any time hitherto. I remember when the first appendix operation was done in Kansas City. A man with twenty-five cases of abdominal surgery was considered a man of great experience. Surgery passed rapidly through the various stages and experience grew, until now there is practically no organ in the whole body that has not been explored, and now an abdominal operation is usually so uncomplicated and so uneventful that we are almost uninterested. Now surgeons of experience have done thousands of cases of various types.

Now, leaving the evolution of surgery and coming up to the present time, we are beginning to realize that the human body upon which we operate has within itself a certain degree of mechanism of resistance which we must preserve. The majority of surgical deaths are due to not having preserved this degree of resistance. When we open the abdomen we discover the liver, the largest organ in the entire human body. We find the abdomen occu-

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pied by many feet of tortuous intestine from the stomach to the anus, and it should be realized that through this passes the food and the chemical products produced by digestive agencies. We must realize that in the gastro-intestinal tract we have the most complete factory imaginable in which the fundamental principle is to convert foods into such a form as can be utilized by the human body. We must realize that there are many by-products, toxic in form, and all those poisons extracted from the food are passed along the gastro-intestinal tract. Now then, we must realize that with this sewage tube on one side and the liver on the other side, there is marked compactness of the organs of the abdomen. Next we can think that each drop of blood from the entire tract passes first to the liver, and in this way get a conception of the very great importance of the liver in the human body. We must remember the function of the liver in waste elimination and blood purification. If we have a liver abundantly able to carry on its function then we have a practically well body. If the poisons get past the liver circulatory system then we have a poisoned body and our patient suffers to varying degrees according to the extent of the poisons. Therefore the probable explanation of the cases that die is some pathology other than that present at the time of operation. Everything has been done technically that should have been done and yet we have a mortality. As an introduction to the subject of abdominal surgery, let me say that the theory of damage done the liver by an anesthetic has been proven very true at Johns Hopkins University. Every anesthetic does a certain amount of damage to the liver, and this includes local anesthetics. Chloroform does the greatest damage, ether less, and nitrous oxide less than ether, but each of them damages to a certain extent. Let us keep this in mind, that any anesthetic agency we use is going to do some to damage the function of the liver cells to a certain degree.

It is a significant fact that without this physiological resistance, entrance into the abdomen either by penetration from without or perforation from within, and the consequent interference with the cells physiologically, would be immediately fatal from resulting peritonitis. We know there are many cases of perforation which spontaneously recover. During the War many men were shot through the abdomen and lower bowels and yet made the best of recoveries. In patients who are old in years we have what has come to be described as acute gastric dilitation, and many explanations have been given as to the causes of acute gastric dilitation. As a matter of fact, this condition is due to the effect of poisons, physiological to begin with, but carried on by a fatal toxemia, and the result is that the patient often dies with what we call acute gastric dilitation. The physiological resistance is not sufficient to combat the poisons. In some cases we find that the patient dies from an interruption of the secretion of urine or acute nephritis, and in many cases we are inclined to say the patient died from ether nephritis. In my judgment, the patients who die because of nephritis die from the effects of poisons which should have been disposed of by the liver, but the liver failing to take up the load throws the burden onto the kidneys, and in this way the chemical by-products are not being taken care of but form poisons which because of this inactivity come into the system, resulting in toxic nephritis. Thus our patients die from the incapacity of the kidneys to take care of anything other than normal matter, which condition we may call toxemia.

Some years ago I had a case of tubercular kidney, which I finally operated for on the left side. Before removal kidney functional tests of the capacity of the kidney on the opposite side had been made. Apparently the right kidney was acting properly, and we thought the trouble was limited to the left kidney. After the removal of the kidney convalescence was uninterrupted for thirteen days—normal temperature and normal pulse. On the thirteenth day the patient was sitting up and she asked me why she could not go home. I told her that her convalescence had been very good except for one thing —that for thirteen days she had not secreted any urine. Uremia developed, and shortly thereafter the patient died. The kidney which we had removed was the better of the two. In many cases where the patient "blows up" the surgeon will say that he developed acute adynamic ileus, or acute dilitation of the stomach as well as gastrecasia, and we say the patient died of adynamic ileus. We do not say that he died of acute nephritis. We say a patient died of ether pneumonia when he probably had toxic pneumonia. This all goes back to the fact that the liver in these instances has been unable to take care of the additional amount of

poisoning. This, therefore, should bring to our minds as surgeons the fundamental fact that we must be sure of the physiological condition of our patient before operation. There is no practical way to make a test. The only way we can be safe is to assume that every patient is inadequate in hepatic function, and therefore it is our problem to put our patient into proper condition. Now, this means in chronic surgery, namely surgery in which we can take our time and adjust the operation to any time that suits. To begin with, the surgeon strives to lessen the amount of poison which is going to be absorbed from the gastro-intestinal tract. We can get rid of some of this absorption by a period of preliminary purgatives. This fact used to be recognized and employed by surgeons who would give their patient two ounces of castor oil the afternoon prior to operation and then go ahead and operate the next morning. It was found that we had more complications in that way than by less drastic measures, and now most surgeons avoid the giving of preliminary purgatives. If you have an old case of gall stones, then you can give a purgative perhaps a week before operation to clear out the gastro-intestinal tract, but we feel it unwise to give a purgative just before operation.

We must also realize that there are many cells in the human body, particularly in the liver, and these are like the mechanism in a battery, as described by Dr. Crile of Cleveland, in that they require water. Many patients have been dried out, they have not cared to take much water. But the patient needs fluid in large quantities in order to carry on the increased activities of the liver and kidneys and to clear up the kidney secreting functions so that these organs may take up the load placed upon them. Most patients are benefitted by preliminary alkalinization. Without doubt there are patients who die of acidosis. Get rid of acidosis with bicarbonate of soda in fair doses for a considerable length of time before operation. Those gall bladder cases can be postponed for a week. Instead of letting the patient wait a week at the hospital, put him through the proper preparation at home — large quantities of water and a teaspoonful of soda four times a day. We must remember that we are preparing for the actual damage the anesthetic is going to do to the liver at operation. It has been my observation that in these old chronic gall bladder cases where the patient is jaundiced, if the patient is given quinine for a considerable length of time before operation he will undergo it very much better. If we have gall bladder infection we probably have also infection of the rest of the hepatic system. All the cases which have been considered are chronic ones where time can be taken to put the patient in proper shape for operation, and now I want to say a word about acute abdominal conditions.

Fundamentally we have been taught that every case of acute appendicitis ought to be operated as soon as diagnosis is made. Ordinarily that is a good rule, but if we are able to interpret the physiological resistance of the patient to infection within, we may find that it is not a good rule in every case. Occasionally we have a patient who is blown up, with gastro-intestinal pains, marked abdominal distention, and considerable vomiting. Operation at that time means death. We must learn that the important part for us to determine is the physiological capacity of each individual case. Sometimes these conditions are due to irregularities in eating and drinking. To illustrate my point, a young man walked into the hospital one day complaining of severe pain in his abdomen. Several of the physicians said he had acute appendicitis. His abdomen was greatly distended. I said we should not operate on him in that condition, and they replied that he might have a perforation while we were waiting. I would have been held responsible for that death, and against my better judgment I operated on that boy. He never recovered from the acute gastric dilitation. If his stomach had been washed out and he had been given fluid beneath the skin to replace that which was lost, he would have flattened out and reached the stage where surgical operation was possible. We have been taught that every case of gastric obstruction should be operated immediately, but as a matter of fact we do not have any suspicion of the diagnosis until perhaps twenty-four to forty-eight hours have elapsed. Recently a case was brought into the hospital. The patient was vomiting continuously, his eyes were opaque, and he was practically moribund. I said, "He will die if I operate on him now." He was given gastric lavage every three hours and large quantities of fluid were given subcuticularly and by proctoclysis. He flattened out, his pulse became good,

and his mind cleared. He was then permitted to take some liquids by mouth and the condition recurred. The original treatment was instituted, his symptoms again abated, and I operated him thirteen days later with the result that he recovered. I had reduced that case to a physiological condition where it was possible to operate him safely. When I got into the abdomen there was no sign of anything wrong with the appendix. Had that operation been done on a patient in a poor physiologic condition is would have resulted in death.

The trend of modern surgery is towards the man who can do beautiful true surgery, the man who understands thoroughly the physiologic condition of his patient and operates that patient when he can get him in the best physiological condition to develop resistance.

Argyle Building.

SIMPLICITY IN INFANT FEEDING*

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Within the past decade there has been a rapid advancement in the education of the public in child hygiene and infant feeding. Consequently, the physician is called upon now more than at any time in the past to undertake the care and feeding of the normal baby.

This has long been a difficult matter for some physicians who are called upon only occasionally to prescribe a formula. And it is little wonder that so much confusion exists, when we look back upon the various theories and ultra-scientific practices of many who write on this subject. Nearly every young physician and especially the pediatrician comes into his community with a different method of infant feeding. These differences depend upon what part of the country he received his medical training. In the final analysis these differences are more apparent than real. All are able to feed a baby successfully, but it is not so easy to impart that knowledge to the general practitioner who has but a limited time to devote to the subject.

The pediatrician soon learns that the majority of normal infants will thrive on a variety of foods. We occasionally see impractical and illogical milk mixtures, each varying widely from the other and the infant thriving in spite of the feeding. We have seen infants gain satisfactorily on milk mixtures that have had all the cream removed over a period of many months, others who received cream and water mixtures and still others on sweetened condensed milk throughout the first year. Such babies, however, are in the minority.

Perhaps the greatest fault of our feeding practices in the past was over-dilution of the milk and the fear of injury from first one element of the milk and then another. In some parts of the country they were afraid of the cream, in others it was the sugar or the protein. In an effort to reduce one of these elements or perhaps to increase it, we have developed a multiplicity of methods of infant feeding.

BREAST FEEDING

So much interest in compounding artificial food is likely to lead to a lessened interest in breast feeding. If every physician who has charge of the baby during the first few weeks of its life would make an effort to keep the baby on the breast, or at least make it exhaust the breast supply before artificial feedings are started, there would be much less trouble in conducting it safely through the first year. Even if there is not enough milk in the breast to give it sufficient food and it is necessary to give it complemental feedings, the feeding problem is much more simple.

Too often the bottle is started in the second or third day of life because the breast flow has not been established, or perhaps because the baby is losing weight. This is frequently the beginning of the failure of the breast supply. During the first four days of its life the baby should be made to stick to the breast in the great majority of cases, and we should not pay too much attention to the initial weight loss. The regular and complete emptying of the breast is essential to a good supply of breast milk and nothing contributes to this more than the stimulation of the breast by the nursling. I believe we pay too much attention to the nurse's chart on the weight of the baby during its first week of life and not enough to retracted or fissured nipples that may become so painful that weaning is compulsory.

Breast milk does not always agree, even small amounts may disagree. But if the baby gains in weight satisfactorily we

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should contend with a certain amount of discomfort. In my experience it is unusual to find breast-fed infants whose stools are normal and who are perfectly comfortable. They may cry a great deal, have frequent stools containing mucus and curds and still gain rapidlly in weight. Such a baby may be getting too much milk. We may be able to make it more comfortable by giving warm water with the nursing or immediately before, and thereby lessen the intake. Or if the baby is on a feeding interval shorter than four hours, we should then try a longer interval. Where the mother has an abundant supply of milk and the baby nurses vigorously the four hour interval is usually the best.

Breast fed babies that cry very much are usually hungry. Constipation and an insufficient gain from week to week is good evidence that the baby is hungry. It is advisable to try one or two bottle feedings in such babies and note what relief it gives. Equal parts of milk and water boiled five minutes with a teaspoonful of cane sugar in each feeding will often be followed by a period of well-being that will leave no doubt in the mind of the parent that the child was hungry.

Along with the abdominal pain there may be regurgitation. If this is due to overloading the stomach as is sometimes the case, the longer nursing interval should minimize it. If the vomiting and abdominal pain is severe, the fault may be with the baby and not with the feeding. The regurgitation and colic may be the result of a hypertonic intestinal tract in which there is some degree of enterospasm. These hypertonic infants cry and regurgitate, and gain in weight in proportion to the amount of milk they retain and the amount of sleep they get. A small dose of atropine, increased to the point of flushing or until the symptoms are lessened, usually 1-1000 to 1-500 grain doses before feeding is commonly used. Severe vomiting with loss of weight should be investigated for pylorospasm or pyloric stenosis.

Errors in the mother's diet may produce discomfort in the baby. However, this matter has been very much over-emphasized. Mothers frequently take large quanities of milk with the idea that it makes them have more milk. Others force malted milk or eggs, and it has been determined by removing from the diet certain articles taken in excess, that eggs, wheat and milk occasionally produce discomfort in the nursing baby. This has also been confirmed by dermal tests using the protein extracts and thereby proven to be an allergic manifestation.

In the past too much attention has been paid to the stools. In a breast fed baby if the bowels do not move daily, there is no need for a cathartic or an enema unless the baby is uncomfortable. Constipation in the breast fed is some evidence of insufficient food but the other signs of hunger should be present before artificial food is started. If the baby is gaining and is comfortable on the breast five or six stools a day do not demand any immediate attention. In the case of bottle fed infants more attention is to be given to this number of stools and likewise to constipation.

The two important desiderata in the nutrition of the breast fed infant are, a comfortable satisfied baby and a normal weekly gain in weight. How much the baby gets, how often it nurses and the number of stools each day are all of secondary importance. Many physicians weigh the baby before and after the nursing to determine how much it gets and whether it needs additional food. I have never been able to get much information by weighing the baby before and after nursing to see whether it was getting enough milk. In fact I have never found out how much it needs. The baby is brought to the doctor usually because it was giving trouble and if it cries and fails to gain satisfactorily it is certain that it needs more food. Dr. Gerstley has determined, by weighing a large number of babies before and after nursing, that a baby may take from three to seven or eight ounces at one time. One of the babies in this series took 26 ounces of breast milk daily at the age of one month. Two weeks later it was taking a daily average of 20 ounces and progressing satisfactorily. In the same baby the intake of breast milk at the various nursings varied from 4 to 8 ounces. It is well known that a crying, irritable, sleepless infant will need more food than the quiet, well nourished baby that sleeps well. What physician then, can weigh a baby at his office before and after nursing and tell whether it needs more feeding? We should give the baby enough regardless of any preconceived notions about stomach capacity or how much he needs. He must be comfortable and he must gain normally in weight from week to week or he will like-

ly be taken to another consultant who believes less in rules and stools, etc.

The interval between nursings differ with the individual baby. We should not adopt a rigid regime of three or four hour periods, but be guided largely by the baby. I believe that in the normal baby the interval should not be closer than three hours. Where the baby is getting an abundant supply of breast milk the three hour interval will probably be too short. Such an infant may have to be awakened at each three hour feeding and may suffer from colic and frequent curdy stools due to too much milk. On the other hand, when the breast milk is not abundant, the baby may not get sufficient food to sustain him for four hours, and if a three hour schedule is followed he often does much better. A bottle fed baby, if undernourished, and especially during the early months will usually do better on a three hour schedule. Those that are well nourished and getting sufficient food may not be ready for a feeding every three hours. There is no way of telling by looking at a baby under six months of age whether it shoudl be on a three hour or a four hour schedule.

ARTIFICIAL FEEDING

Much of what was taught us fifteen years ago regarding the modification of cow's milk for infants, has fallen into deserved disrepute. To some extent, tradition still influences our practices as is evidenced by the different methods taught in the several medical centers. We were formerly taught high dilutions and to greatly restrict first one element of the food, and then another. Barley water was given day after day to a starving baby deprived of his milk because all the ills of the digestive system were attributed to either the fat, the protein, the whey or bacteria. Lime water was added to the food of the sick baby if not routinely in all milk mixtures, which in the light of our present knowledge made them more difficult to digest. Now we realize that all the digestive disorders are not due to overfeeding, but are more likely due to over dilution. In fact most of the persistent cases of vomiting that I see are on excessive dilutions. We do not reduce the food drastically and increase the dilution when vomiting or diarrhea starts as in former years. Of course a baby may become ill from overfeeding, but these cases are easily recognized, the symptoms are manifested at once and usually are easily corrected. On the other hand, long periods of underfeeding produce symptoms that are more insidious and the infant may develop chronic intestinal indigestion, malnutrition and rickets and become a difficult feeding problem.

To successfully feed the majority of normal infants it is not essential for the physician to have a knowledge of the physiochemistry of digestion. Neither is it necessary to know very much about the individual elements of the formula. It is necessary to learn a few basic principles that have been evolved in the past ten years and to disregard much of what was taught prior to that time. At the same time we should know what constitutes a good nutritional state, and see the baby at frequent intervals to see that it is making the normal weekly gain in weight.

The modification of cow's milk can be so simplified that any physicion, even with very little time to devote to it, can be taught to conduct the feeding of the majority of normal infants. Those with digestive or nutritional disturbances present an entirely different problem and I believe should be referred to the physician who gives much attention to this subject. In this paper I shall attempt to describe a few simple procedures that can be applied to feeding the normal baby on mixtures of milk, water and sugar.

The first and most important step in the modification of cow's milk is boiling. This should be done in a single boiler and the milk boiled actively for five minutes. Shorter periods of boiling may suffice, or longer periods in a double boiler, but the five minutes boiling with constant stirring has much to commend it. There is no valid objection, but some prejudice against milk. It is probably true that boiling lessens the antiscorbutic vitimin, but even the raw cow's milk and breast milk is deficient in this element and the routine use of orange juice makes up for the deficiency.

The principal difficulty in the digestion of cow's milk is in the protein. This is three times as great in cow's milk as in human milk and for the most part is casein. In human milk the protein is lactalbumin and this forms small floculent curds in the stomach which are easily digested. The casein of raw cow's milk forms large, tough, leathery curds very difficult to digest. The active boiling breaks up this protein curd and facilitates di-

gestion and at the same time makes the milk safe from pathogenic bacteria.

When we dilute the milk so the protein content at least approximates that of human milk, the fat content is so reduced that, for all practical purposes it can be disregarded. The sugar content of cow's milk is about two-thirds that of human milk, therefore when the milk is diluted the sugar content is so reduced that the infant will not gain unless we add sugar to the mixture.

Therefore the food will consist of milk and water boiled five minutes with some added sugar. Evaporated milk, because it has been subjected to a high degree of heat, lends itself admirably to modification for infants. It fulfils all the nutritional requirements, except a sufficiency of vitamin C, and has been used successfully over a long period of time. It is probable that its ready digestibility by infants, even in the first week of life is due to heating to 200 to 240 degrees autoclave, which has been compared to boiling from one to two hours. It should not be confounded witih sweetned condensed milk. Evaporated milk has nothing added and only part of the water (60 per cent) removed.

The amount of food that baby will take at each feeding may vary considerable. For a starting point we can estimate the number of ounces at each feeding by adding two to the age in months. If the mixture is weak and of low caloric value the baby will take a larger amount to satisfy the hunger. On more concentrated mixtures the amount will be less. But by adding two to the age in months we arrive at a fair estimate of its capacity, with always a minimum of three ounces and a maximum of eight.

The number of feedings should not be more than seven in twenty-four hours, six during the day at three hour intervals and one during the night if the baby awakens for it. The four hour interval should be encouraged, but no hard and fast rule should be made. If the baby is well nourished and gets sufficient food it will tend to go on through to the four hour period. If underfed or underweight the three hour interval will probably be the better. Ordinarily at the third month the night feeding can be discontinued.

In the choice of the three or the four hour feeding interval and the time to discontinue night feedings, we would do well to be guided largely by the baby. Many babies sleep through the night from birth. I do not think it is desirable to awaken the baby every three hours to be fed. If it is allowed to sleep and awakens at the end of three and one-half hours and demands its food, I believe it should be fed instead of having to wait until the four hours pass.

How much shall we dilute the milk? If milk is boiled actively for five minutes, it is my experience that the normal baby can digest equal parts of milk and water. A possible exception may be made in infants during the first two or three weeks of life that get no breast milk. In such infants the cream is removed for a few days until the mixture is taken well, when the cream is gradually added. At three or four weeks of age most infants can digest the 50 per cent milk and water mixtures, provided they are boiled five minutes or more. Evaporated milk diluted to this strength that is, one part evaporated milk to three parts water, can be taken during the first week of life.

TABLE I.

The quanity of sugar to be added to the formula is very flexible. In former years we were taught to compute the amount with care and to try to approximate the six or seven per cent in mother's milk. Now we know that no such meticulous care is needed and our mixtures contain from five to fifteen per cent. In fact we seldom figure the per cent. It is a good practice to start with a small amount, one ounce to the day's feeding, and if well tolerated as is evidenced by a constipated stool or the absence of fermentation and frequent stools, this is gradually increased to two ounces. In concentrated mixtures when lactic acid is used as much as three ounces are added. A mild degree of constipation is desirable in a bottle fed baby, and if the maximum amount of sugar is tolerated it has a favorable effect on the weight.

Assuming therefore, that we have a baby four months old, weighing 13 pounds, we would give six ounces each feeding and probably six feedings daily at three hour periods. According to the procedure outlined he would be given three-fourths milk and the formula would be Milk 27 ounces, Water 9 ounces and Sugar 1 to 2 ounces.

If this did not satisfy the baby after a few days, I would gradually increase

the milk and decrease the water until the baby was satisfied, without increasing the quanity. The baby should have enough and at the same time we should avoid over dilution even if the strength of the mixture approaches whole milk.

The choice of a sugar depends to a great extent upon its effect on the number and character of the stools. Cane sugar is cheap and always available and in the majority of infants it can be used. Corn syrup for the same reason is widely used, it has the advantage of not being so sweet when large amounts are used. Cane sugar breaks up further down in the intestinal tract the maltose and dextrin and the products of its fermentation have a tendency to increase the stools. Dextri-Maltose, Maltose-Dextrin, Mellins Food and Karo syrup are digested higher in the bowel and are not so likely to produce the same degree of fermentation with its laxative effect.

The differences between the sugars however, is arbitrary, and our predjudices guide us to some extent in our choice.

ACIDIFIED MILK

If further concentration of the food is necessary we can make even boiled milk more digestible by the addition of some acid so that the hydrogen-ion concentration approaches that of human milk. Under normal conditions the food in the stomach is brought from an alkaline or neutral reaction to a markedly acid reaction by the hydrochloric acid, to a ph of 4 to 5. During this time it passes through a range of acidity that is optimal for the principal gastric ferments, rennin, lipase and pepsin. Cow's milk contains more buffer substances than human milk. When human milk is taken into the stomach, the gastric acid buffers these substances easily and the content of the stomach soon becomes highly acid, reaching that degree of hydrogen-ion concentration (3.75) where peptic digestion takes place normally. On the other hand, after a feeding of cow's milk a greater amount of the hydrochloric acid is required to overcome these buffer substances, consequently the food stays longer in the stomach until enough acid is produced for peptic digestion. The cow's milk uses up acid that should remain as such in order to promote the activity of the pepsin. If we can neutralize or debuffer these substances in the cow's milk before it is taken into the stomach, we spare the hydrochloric acid of the stomach to perform its normal function, viz., to create a degree of acidity that is optimal for peptic digestion.

Lactic acid is most frequently used. Three drops are added to each ounce of boiled cooled milk. I have used two drops to each ounce and find that works satisfactorily and with less liklihood of curdling the milk. Three ounces of corn syrup are added to the quart of lactic acid milk. It is a good practice to mix the syrup with an equal quantity of water in a cup and then add the lactic acid. The acid-syrup mixture is then added to the boiled cold milk, slowly, a teaspoonful at a time with constant stirring.

This concentration of the food enables us to give smaller feedings with higher calories. This is desirable in infants very much under weight, those with feeble digestive powers and in vomiting infants. A poorly nourished baby needs relatively much more calories per pound than a normal baby of the same age, although its stomach capacity is no greater and its digestive capacity probably not as great. Therefore anything we can do to make the food less bulky and more digestible is much to be desired.

Not every baby needs lactic acid in its food. Most normal infants adapt themselves to cow's milk readily and soon are able to digest it without much dilution, in spite of its buffer substances. Evaporated milk with an equal quantity of water to make whole milk has been used with and without lactic acid by Brenneman, in very young infants. He finds it just as satisfactory without the addition of acid and attributes its success to the fine curd due to the heating process.

Orange juice should be given daily to every infant whether on the breast, raw cow's milk or boiled milk. This is fairly well understood by the mothers in respect to heated milk, but they should be impressed with the fact that raw milk and even human milk is deficient in vitamin C.

Table 1. Milk and Water Dilutions According to Age.

Birth to 2 mo. 1-2 Milk and 1-2 Water with 1 oz. Sugar.

2 mo. to 4 mo. 2-3 Milk and 1-3 Water with 1 to 2 oz. Sugar.

4 mo. to 6 mo. 3-4 Milk and 1-4 water with 1 to 2 oz. Sugar.

7 mo. Whole Milk, gradually omit Sugar.

Note: About four ounces of water should be added in addition to that required, to make up for the loss in boiling.

A BRIEF REVIEW OF DIABETES MELLITUS*

F. CLINTON GALLAHER, M. D.
SHAWNEE

Members of the Pottawatomie County Medical Society and Guests:

It is not my intention to introduce any material foreign to your knowledge and experience, but rather to indicate briefly, in review, a few considerations of a condition about which practically nothing is known.

I. DEFINITION

Diabetes Mellitus is a metabolic disturbance which is characterized by a deficiency in the pancreatic secretion of insulin, a substance which is essential in the normal oxidation of carbohydrates; and where it is present in subnormal amounts there is an increase of the blood sugar content, and often a spilling over of sugar in the urine. Often associated with the disturbed carbohydrate metabolism there is disturbance also in the metabolism of protein and of fat.

Though doubt in some cases seems well founded, the definite lesions in the pancreatic islands of Langerhans in Diabetes are usually hyalinization, fibrosis, or hydropic or vaccuolated degeneration of the Beta cells; the latter is most common. Thyroid disturbances are sometimes associated, and it seems probable that other members of the endrocrine system may be involved.

II. ETIOLOGY

Several factors are thought to predispose to the condition. Obesity is usually listed among the first. Members of the Hebrew race are more often affected; men more often than women, in a ratio of about 3 to 2. The lack of exercise, the presence of infection, heredity, and nervous influences are mentioned. The disease occurs more often after 40 years of age; it is more severe, as a rule, in the young; it may be present at any age.

*Delivered before Pottawatomie County Medical Society, March 16, 1930.

We have definite knowledge of several factors which tend to induce Coma:

(*a*) Indiscretion in diet is perhaps the most important factor. A diet should satisfy the patient, and no management is adequate when this requirement can not be met. Sometimes it is impossible, and there are those who will steal food. The degree of intelligent cooperation with the physician in charge will very often indicate the prognosis. Given adequate guidance, except in quite severe cases, the prognosis is often in the hands of the patient.

(*b*) A second factor is the misuse of Insulin. One example deserves particular mention. Patients using Insulin occasionally loose their appetites, and in failing to take food, omit the administration of Insulin. It is true that the dose would usually be somewhat diminished, but to omit it entirely is an action of danger. Metabolic processes continue and are slightly more apt to be disturbed when food is not taken. By withholding Insulin also, there is an accumulation of the products of incomplete oxidation, and acidosis is added to hyperglycemia.

(*c*) The diabetic should be carefully guarded against infections, for his resistance to any form of infection is diminished. This is admittedly true, in spite of the excessive leukocytosis often observed in diabetics with infections. The W. B. C. count may be 30,000, 60,000, or more. Moreover, the presence of infection seems to render the diabetes at least temporarily more severe, and it is thought that permanent damage is often done at such times. One remembers also the dread of Diabetic gangrene.

Other conditions which seem of influence in the production of coma are overwork, nervousness, pregnancy, and undue mental strain.

III. DIAGNOSIS

Symptoms may be entirely absent. It sometimes happens that the patient is in actual diabetic coma before the condition is recognized. Diagnosis may easily be overlooked in a mild case, unless one is continually aware that it should be excluded in doubtful cases, and that it is a possible complication in any condition.

Symptoms may include any or all, or none of the following:

(*a*) Polyuria, which is noticed by the patient, with frequency and sometimes nocturia. It is doubtless caused by the

diuretic effect of the sugar, and by another symptom.

(*b*) Polydypsia. This is rather common, and is thought to become prominent because of the dehydrating effect of the increased blood sugar.

(*c*) Polyphagia is sometimes observed. Hunger is present because the body tissues cry out for food, which, though present in excess, they are unable to use.

(*d*) Other symptoms may be loss of weight and weakness, which two are usually proportional. Pruritis may be present; in women it is usually confined to the genitalia, though it may be general.

The condition should be suspected in cases of Furunculosis and in any case where the resistance to infection seems diminished without apparent reason.

One is confirmed or disproved by determining whether or not Glycosuria and Hyperglycemia are present.

IV. LABORATORY OBSERVATIONS

A continued glycosuria is usually indicative of Diabetes Mellitus, though it must be distinguished from a few other conditions of rare occurrence. A blood sugar determination will usually give positive evidence of the condition of the carbohydrate metabolism. The Jones' test is simple, and often adequate. The patient is given a hearty breakfast including cereal with sugar and cream, coffee with plenty of sugar; eggs, toast and bacon perhaps, and hot cakes with syrup. In normal individuals the blood sugar will return to the normal limit of 90-120 mgm per 100 cc in 2½ hours. If the content is much increased it is usually well to do a Glucose Tolerance test. The diabetic curve will show that the increase is prolonged over a period of several hours. Indeed it may not fall within the range of normal limits until treatment is instituted. The duration of this increase is of more significance as to severity than its height. An estimation of the 24-hour urinary sugar is another index to the severity of the disease, indicating relatively the degree of pancreatic deficiency.

I regret the stress which is of necessity placed upon the virtue of frequent recourse to quantatative chemical analysis, since for many good practitioners this aid is difficult to obtain. I cannot believe, however, that a doctor is justified in omitting any effort in securing this service for the patient.

V. DIFFERENTIAL DIAGNOSIS

In suspected cases where a reducing substance is present in the urine it should be demonstrated, if true, that the substance is glucose. Pentose, galactose, levulose, and maltose may so reduce copper. These substances are of clinical significance only in the respect that they may lend confusion in the diagnosis.

If true glycuresis is present, two other conditions must be excluded:

a. Renal glycosuria, which is differentiated by the constancy of glycosuria, regardless of carbohydrate intake; by the normal sugar curve; and by the absence of other symptoms of Diabetes Mellitus.

b. Alimentary glycosuria includes conditions in which there is a trace of sugar in the urine after excessive carbohydrate ingestion, in the presence of undue emotional stress, or with a combination of both of these factors.

VI. TREATMENT

No dissertation upon the treatment could be complete without brief reference to its history. The condition was not recognized by Hippocrates, but was first described by Celsus at about the time of Christ. The early practitioners sought to replace the sugar lost in the urine; later the starvation method was employed. But even symptomatic relief was rare, except in very mild cases, until the advent of insulin, in 1922. For this extract of the pancreas we are indebted to Drs. Banting and Best, who worked under the direction of Professor McLeod of the University of Toronto. Joslin has said that the advent of insulin has made treatment easy, but certainly more complicated. He also insists that no one should ever die from diabetic coma.

A cardinal principal in the treatment of Diabetes Mellitus is to KEEP THE URINE FREE FROM SUGAR. In mild cases it is often found sufficient to reduce, or to set definite limitations upon carbohydrates.

In moderately severe cases it may be necessary to suggest a standard maintenance diet. For each case this must be calculated anew. A typical formula may be cited as an example: the 70-60-120 gm. ratio, of carbohydrate, protein, and fat. It is always preferable to allow the patient to continue his usual activities. Weight should be maintained, though not fat. Nor should rapid reduction in weight be suggested. When at liberty to control,

the physician should seek to keep the weight slightly sub-normal. It is suggested that a standard maintenance diet should be determined, and insulin given if necessary, in doses sufficient to keep the urine sugar free. A rather accurate index to the amount of insulin that may be required is indicated by the determination of the amount of sugar eliminated in 24 hours. The physiological requirement is found to be about one unit per three grams of sugar.

More severe cases will require more study and should be kept under almost constant observation for a considerable period of time. In addition to determining the diet and insulin requirements, the physician must indicate the time interval between insulin and food. He should consider the number of doses of insulin and reduce them as much as possible. He must have regard for the general health of the patient, and give particular attention to the cardio-vascular-renal system. He should be aided, if possible, by frequent check of the state of carbohydrate metabolism through quantitative determinations. At least one daily qualitative test of the urine with Benedict's solution should be insisted upon. Ambulatory patients may be supplied with a simple tray containing the necessary equipment: a bottle of Benedict's solution, a small burner, test tubes and a test tube holder. In so checking his own urine for glycosuria, its absence lends confidence in the management; its presence affords a warning to the physician in charge.

Coma is not rare, and its presence always constitutes an emergency. The treatment should (1) Combat the shock, (2) Reduce the hyperglycemia, (3) Correct the dehydration, and (4) Neutralize the acidosis. Body Heat should be maintained. Insulin is used in initial doses of 40 to 75 units, followed by 10 to 20 units each hour until the urine becomes sugar free. (Catheterization is done with serious regard for the danger of infection.) Fluids should always be pushed. At least 200 c.c. per hour should be given, by mouth or otherwise. An enema should be given. Cathartics are avoided. A proctoclysis of normal saline should be given (Murphy drip) with 2 per cent bicarbonate of soda if necessary. Severe dyspnea (Kussmaul breathing) is considered as the symptom most truly indicative of the presence of a severe degree of acidosis. Many workers believe the use of alkali is unnecessary, and regard it somewhat as digitalis is regarded in thyroid conditions affecting the heart. It is probable that the most beneficial treatment is that which seeks to correct the condition which produces the acidosis. Not more than 20 gms., of the antiacid should be given. Hypodermoclysis of normal saline should often be given, 1000 c.c.

A determination of blood sugar is of value in prognosis, and affords aid in estimating the amount of insulin which may be required. If it should fall below 60 mgms. per 100 c.c, sugar should be administered, whether there are symptoms of insulin shock or not.

Any diabetic may be subject to HYPOGLYCEMIC reactions, but a few are found in whom the blood sugar level must be sustained within very narrow limits, and a slight departure from the physiological normal for these individuals will throw them into impending or actual coma, or into what is usually called insulin shock. Such a condition may be of rapid onset, with profound weakness, mental confusion, diplopia, incoordination, fixed stare, asphasia and muscular tremblings progressing to convulsions. The more usual manifestations of hypoglycemic reactions, induced by an overdose of insulin, consist of general muscular weakness, flushing of the face, a weak, hollow feeling, as of hunger, and restlessness, with profuse sweating. Sugar, orange juice, or carbohydrate in any form will often allay these uncomfortable feelings in a few minutes. Adrenalin (4 to 15 min.) will counteract the reactions temporarily, but should be followed by 5 to 20 gms. of glucose at once. Intravenous glucose is used in severe cases.

In concluding we may indicate that all management, in its present status, represents an attempt at symptomatic relief. It is, however, true that some apparent improvement in pancreatic function is observed when careful management is continued over an appreciable period of time. The carbohydrate ingestion may sometimes be increased on the same dosage of insulin; insulin in small doses is sometimes found unnecessary after it has been employed for a few months. A few cases become progressively more severe in spite of most careful treatment.

Until the etiology and the true nature of the disease is more fully appreciated it seems probable that cures will be rare, and recurrence in apparent cures frequent. Until then it seems indicated that all dia-

betics should be considered in danger of health, or of life, except with faithful treatment and frequent check of the state of the carbohydrate metabolism. With such care, however, all but the most severe cases may be found to continue in health, to enjoy the pursuit of their usual activities, and perhaps outlive the physician who directs them.

I wish to acknowledge with appreciation the source of treatment methods here indicated. They have been employed, in general, by Dr. Byron D. Bowen, of Buffalo, New York, with whom I had the privilege of rather intimate association for a number of months. Since the advent of insulin he has studied more than 85 cases of diabetic coma, and his conduct of them has been such that his mortality rate is slightly less than that of Joslin. His report of a study of 85 cases will appear in an early number of the Archives of Internal Medicine.

AMABIASIS—PRESENT DAY INTEREST

ARTHUR W. WHITE, M.D. F.A.C.P.
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Amabiasis in an infection, by the Entameba Hystolitica, in the large intestine, with a tendency to produce frequent discharges of blood and mucus continuously or interruptedly, and to an invasion of the liver. This tendency to produce diarrhea is proving to be less marked than is wont to be considered, i. e., healthy carriers or those with mild symptomatology being the rule rather than the exception. In 533 cases reported by Brown of Mayo Clinic only a small portion gave a history of dysentery or had ever been in districts where amoebic dysentery is endemic.

Reports generally for the past few months especially, show a definite increase in the incidence of this disease—and as only a relatively small percentage shows the characteristic clinical evidence, it seems highly important that especial evidence be found or developed that might be of value in routine examination of the patient in recognizing the obscure cases. There has been nothing developed, of late, of diagnostic value except that of Craig[1], who by means of rather elaborate technic prepared the reagents for a specific complement fixation test analgous to the Wasserman test. In September, last, he reported having tested 623 patients, with various types of ailments, in the Walter Reed Hospital—67 gave a 3,or 4 plus reaction. In all but six of these cases Entameba Hystolitica were found on examination of the stools. The method seems to be, as yet, in the crude stage and the difficulties in preparing a satisfactory antigen make this, for the present, unsatisfactory for routine use but will doubtless be developed to the point of practical value in the near future.

In 1875, Losch[2] observed amebae in dysenteric stools and suggested a causative role—nothing more is reported in the literature until 1885, when Kartullis[3], after a long series of investigations, defined two types of dysentery—an endemic form due to ameba and an epidemic form due to bacteria. This was not generally accepted, however, until 1900, when etiology of baccillary dysentery was definitely established. In 1891 Councilman and Le Fleur[4] of Baltimore definitely fixed the relation of striking lesions wherever the amebae had penetrated the intestinal mucosa. These are the men who introduced the term "Amebic Dysentery," by which name the disease is still generally known. (However, the term "Amabiasis" is coming into use more and more because the dysenteric features appear in such a small percentage of the infected cases.) Two types of amebae were found—one was called Entameba Hystolitica because of its ability to dissolve tissue—the other the Entameba Coli, parasitic but non-pathogenic.

The Entameba are highly parasitic, hence have not been able to be developed outside of the animal host in nature. Thus far culture of the parasite has been very unsatisfactory. Cutler[5] has reported, rather recently, the cultivation of Entameba on a selected medium—multiplication occurred only in an extremely small percentage of cultures. He was unable to separate the few Entameba from contaminating bacteria or to isolate a strain that would produce a single cell.

The intestinal lesions in Amabiasis are confined to the large bowel, the caecum being the site of preference, although the hepatic flexure and sigmoid often show definite involvement, with distribution of lesions throughout the whole bowel as the disease progresses. However, islands of normal mucus membrane are always found even in advanced cases. In the attack a minute area of inflammation appears surrounded by an area of hyperaemia; this may be round or long and narrow; soon there appears a small yellow

dot in the center—an area of necrosis. The base of the ulcer is gradually eroded but perforation of the bowel seldom occurs. The amebae continue to burrow through the mucosa and submucosa and being cytolytic in their action produce a dissolution of the tissue with which they come in contact. There is a tendency of the mucosa to heal over by scar tissue. According to some of the more recent investigators as James[6], Weyon and Dobell, the amebae may bury themselves in the mucosa producing an abrasion so small as to be almost invisible microscopically, which may explain the cases with very moderate symptoms accompanied by definite lesions in the wall of the bowel—again James[6] advocates that the parasite may live in the lumen of the bowel without attacking the mucosa except under certain circumstances, probably the only logical explanation of the condition of healthy carriers.

These cases may become active following dietary indiscretions, intermittent disease, exposure or any condition which may lower the resistance. In the classical case the history recounts numerous attacks of diarrhea, the passages being mostly blood and mucous, marked tenesmus, vague abdominal pains, disturbed appetite, loss of weight and general incapacity. The dysentery in these cases is due either to a generalized ulceration of the entire bowel with the resulting colitis or to ulcers in the sigmoid and rectum—but amebic ulceration of the coecum, hepatic flexure or transverse colon may occur without dysentery, even though the lesions be well marked. In cases of this type constipation and diarrhea may alternate or constipation be the rule. The symptomatology is quite varied, usually that of the ordinary type of mild spastic colon so that the diagnosis cannot be made except by finding the Entameba Hystolitica in the stool. This group comprises by far the greatest percentage of amabiasis cases. These are the cases so commonly overlooked and as stool examinations, as made by the average hospital laboratory, particularly with reference to amebae, are not to be depended upon, for as James[6] says, "This is a task requiring long and special training," unless proctoscopy is done routinely, nothing offers itself as even a suggestive diagnostic factor pointing to amebic infection.

This may help to explain the many reports of abcesses of the liver without the history of amebic dysentery. Amebae are frequently found in the venules from which they readily gain access to the portal circulation, from thence to the liver; then, too, bacteria are prone to follow the course of the amebae producing an abccess in the substructure of the bowel wall, or by following the blood stream, in the liver.

It seems, then, two things are quite obvious from a diagnostic standpoint, first that examination of the stools may furnish no evidence except in cases of healthy carriers or of definite dysentery—that in the mildly infected cases with unclassical symptoms the amebae may not be found because of their adherence to or in the bowel wall.

Hence an area of the mucosa must be found from which ameba may be obtained directly. In any case that has been infected any great length of time the sigmoid is more or less involved so that by the use of the proctoscope, one or more abrasions may be found and with a little experience readily recognized. From this point by pressure with a swab or applicator amebae may be obtained. It is occasionally necessary to use the telescopic attachment of the proctoscope because of the smallness of the infected areas. This should be done routinely on every case of which there is any suspicion of a colon infection.

SECOND

Inasmuch as the colon is the seat of trouble in amabiasis and the X-ray has become so highly developed and is generally of so much value in the diagnosis of bowel conditions, it has seemed strange to the writer that nothing has appeared in the literature, pointing to work of an investigative nature along this line.

With this belief that something characteristic should be found a careful X-ray study of these cases was begun several months ago.

It was found that, first, the motility of the colon was definitely disturbed, the barium moving slowly through the colon with tendency to caecal stasis. That definite defects occurred and not particularly well defined occurring in more than one area—together with evidence of marked irritability of the colon in general.

In nearly every case the shadow showed a mottled appearance either at the head of the caecum or at the hepatic flexure or both and occasionally at the proximal portion of the descending colon. As the barium moved on in the colon where had appeared a mottled appearance, small, round or elongated points were often seen to which the barium adhered—this condi-

tion showed sufficient constancy to permit us to rule out accident or incident. Repeated observations on patients on treatment showed a disappearing of this evidence in proportion to the clinical improvement.

In every patient with whom these X-ray evidences were found there was demonstrated the amebic infection and conversely in every case in which was found amebae with clinical evidence of a bowel disturbance the X-ray findings were positive.

In proving out these cases, stool examination alone was not depended upon—smears were made from the sigmoid and the presence of the amebae determined. Further observation was continued until the four nucleated cysts were found.

The cystic forms, as a rule, appear soon after treatment has begun. This was done to avoid any possible error, as it is often difficult to differentiate the Entameba Hystolitica from the Entameba Coli in the fresh material, and in the vegetative form.

No single defect was found in the X-ray films as in the case of Carcinoma and Tubercular ulceration—so no difficulty was encountered in differentiation from these diseases.

While this study has comprised a rather limited number of cases, the evidence is sufficiently constant to warrant our belief that the X-ray will prove of exceptional value in the recognition of unsuspected cases. Furthermore, our study of the incidence of Amabiasis in the University Hospital at this time, the data on which is not yet complete, already gives us sufficient evidence of rapid increase and spread of the disease as to make any method which will facilitate the diagnosis welcome, if it does nothing more than arouse our suspicions to the end that more thorough search be made.

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REFLEX ITCHING IN ASTHMA

Ray M. Balyeat, Oklahoma City (Journal A. M. A., March 16, 1929), in studying cases of reflex itching in asthma asserts that only a limited number encounter such a symptom. A history of the symptom was elicted in only thirteen out of 420 patients, or 0.3 per cent. Of the thirteen patients presenting such a symptom, all were adults but two, and all had itching in the upper interscapular area. Two patients complained of marked burning associated with the itching, and two patients had both itching just beneath the clavicles and itching between the shoulders. All were very sensitive to pollen, and the itching sensation was more severe during the pollen season. Clinically, from the author's study of the asthmatic patient who complained of itching of certain areas of skin of the upper part of the chest, it appears that the itching viscerosensory reflex due to the irritation of the bronchi is manifested on the skin of the chest more frequently over an area posteriorly supplied by the fourth and the fifth cervical nerves, and an area anteriorly supplied by the third. It is interesting to note that referred itching can be controlled in a similar way to that of referred pain; namely, by pressure. A knowledge of reflex itching and the source of it in the asthmatic patient is of no great practical value but it explains a very uncomfortable symptom in a small percentage of patients suffering from asthma and suggests a practical method of treatment for the symptom.

LIVER EXTRACT IN TOXEMIA OF PREGNANCY

In a group of twenty-five cases, A. M. Mendenhall and David L. Smith, Indianapolis (Journal A. M. A., June 15, 1929), found that there was only one in which there was any strong evidence of real benefit from heparmone. It failed to stop convulsions; it failed to prevent convulsions, and it failed to relieve the general posteclamptic symptoms, such as continued high blood pressure and albuminuria. In one case it failed to benefit the early toxemia of pregnancy. In view of their inability to demonstrate any benefits from heparmore in twenty-five cases, and in view of the alarming symptoms preduced in many cases, they have discontinued its use.

WAYS IN WHICH EMOTION CAN AFFECT THE DIGESTIVE TRACT

Some cases are reported by Walter C. Alvarez, Rochester, Minn. (Journal A. M. A., April 13, 1929), in which there were signs of psychic increase in intestinal tone and activity. Much experimental evidence has been gathered to show that emotions can stimulate or inhibit not only peristalis but also the flow of the salivary, pancreatic and gastric juices. Normally, the sight, smell and thought of food prepare the digestive tract for the work it has to do. Not only mental but also physical fatigue can interfere with this process. A syndrome is described in which most of the sphincters of the body are hypersensitive and hypertonic. It is suggested that more effort be made to warn patients against eating when absent-minded, mentally upset, or greatly fatigued. Not infrequently some article of food gets the blame for an attack of indigestion when the trouble was really due to the fact that a large meal was put into a stomach that was not ready to receive it. It is suggested that after operations, when a return of peristalsis and intestional tone is desired, it would be logical to give the patient some tasty morsel of food, preferably meat.

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Failure to receive The Journal should call for immediate notification of the editor, Barnes Building, Muskogee, Oklahoma.

Local news of possible interest to the medical profession, notes on removals, changes in address, births, deaths and weddings will be gratefully received.

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EDITORIAL

CHEMICAL HYSTERECTOMY*

The use of zinc chloride has been occasionally practiced by a few discriminating gynecologists and surgeons over a period of many years. The writer's attention was first called to this procedure more than twenty years ago through the work of Smith of New Orleans, who at that time was reported to have had remarkable success in the use of zinc chloride packs in certain conditions. The treatment is not, as might be supposed, necessarily used in the treatment of malignant conditions, but rather in those cases showing various troubles of a chronic nature in the uterus, in whom the uterus, or the cervial portion of it, acts as a focus of infection, and in whom the condition is complicated by disease of the kidneys or heart.

Mayo notes that rheumatism, secondary inflammations of the eye, such as, iritis, iridocyclitis, hemmorrhages in the retina, or corneal ulceration, are not entities of themselves but are secondary to focal infection in other regions of the body, very often in the cervix. There are often cases of foul discharge from the uterus, which may occur fairly early in life, but more often in later life, from 42 to 60 years of age, polypoid endometritis, or growths in the uterus nearly always causing hemorrhages. These women are sometimes very fleshy, frequently not married, or if married have borne no children and sometimes are affected with disease of the kidney or heart.

Removal of the uterus through the vagina as well as operation through an abdominal incision and many inches of fat, would be difficult and dangerous and this added risk due to complications may not warrant such an extensive surgical procedure as hysterectomy, and it is in these cases that the use of zinc chloride will virtually perfom a hysterectomy without the risk of a dangerous surgical operation. However, some bad results and even fatalities have occurred in a few instances. The application of zinc chloride calls for the execution of most rigid technique and a very skillful follow-up for the first few hours, thirty-four hours being the limit of time arbitrarily placed by Dr. J. C. Masson of the Mayo Clinic, for retention of the packs.

A more detailed description may be found by consulting the authority noted below*

*Collected Papers, Mays Clinic, Vol. XXI, 1929. P. 427-430.

Editorial Notes—Personal and General

DR. A. W. HEFFLEMAN, of Picher, has recently located in Grove, Okla.

DR. J. M. LANNING, of Picher, has removed to Shawnee for the practice of his profession.

DR. HOLLOWAY, of the U. S. Bureau of Mines Clinic, has been transferred to Hot Springs, Ark.

DR. J. HUTCHINGS WHITE, Muskogee, who has been ill at the Baptist Hospital is reported very much improved.

DR. R. M. ANDERSON, Shawnee, who has been seriously ill for several days is reported very much improved.

DR. GEORGE H. NEIMANN, Ponca City, spent two weeks of June in Rochester, Minn., attending the Mayo Clinic.

DR. F. M. BLACK, has located in Kansas City, Missouri. He was formerly a practicing physician in the Miami mining district.

DR. H. C. ANTLE, Chickasha, has returned from New Orleans where he spent a month attending Dermatology Clinics at Tulane University.

DR. J. C. JACOBS, of Miami, has been kept closely to his home the past six weeks by the dangerous illness of his wife. Mrs. Jacobs is still dangerously ill.

MISS FLORENCE WORLEY was appointed last week as Superintendent of the Miami Baptist Hospital. The selection of Miss Worley has met with general satisfaction.

DR. G. F. BORDER, Mangum, while attending the annual session of the American Association, took time off to purchase a four-passenger Stinson-Detroiter airplane.

DR. BENJAMIN DAVIS, Cushing, after attending the Detroit session of the American Medical Association, continued his trip to Europe. He will visit various surgical centers during the summer, returning early in the fall.

OSAGE COUNTY MEDICAL SOCIETY, held its monthly meeting June 3rd in the Duncan Hotel, Pawhuska. Dr. Ray Balyeat, Oklahoma City, discussed allergic diseases of children. Dr. Salmon, Oklahoma City, discussed baby feeding.

LINCOLN COUNTY MEDICAL SOCIETY held their regular monthly meeting at Sparks, July 2nd. Dr. M. B. Glismann, Okmulgee, read a paper on "Prenatal Care," and Dr. Fred S. Watson, Okmulgee, read a paper on "Diagnosis of Appendicitis."

LINCOLN COUNTY MEDICAL SOCIETY met at Meeker June 4th for their regular meeting. Dr. A. L. Blesh, Oklahoma City, gave a talk on "Surgery." Dr. McDowell, Oklahoma, City, gave a talk on "General Medicine." A banquet was served after the program.

DR. E. S. LAIN, Oklahoma City, after attending the Detroit session of the American Medical Association continued his trip to Europe. After visiting various European centers Dr. Lain will attend the International Dermatological Association, which meets at Oslo, Norway. He expects to return early in September.

DR. JACKSON BROSHEARS, Lawton, is a candidate for the nomination of Lieutenant-Governor on the Republican ticket. Dr. Broshears, many years a resident of Lawton, has always been an outstanding member of the medical profession of Oklahoma.

DR. J. B. HAMPTON, of Commerce, was severely injured while driving his auto near Pryor, on the 9th of last month. His car did not negotiate a concrete culvert and J. B. and his friend Noel Wyatt, a Commerce Banker, were cut and bruised badly. Dr. H. was confined to his home for three weeks, but is able to be about.

POTTAWATOMIE COUNTY MEDICAL SOCIETY held its regular meeting on June twenty-first. Dr. C. B. Barker, Guthrie, presented a paper on "The Suppurating Ear and It's Complications." He was assisted by his wife, Dr. Pauline Barker. The lecture was supplemented with slides and motion pictures which Dr. Barker has had prepared in his own Clinic.

OTTAWA COUNTY MEDICAL SOCIETY had their June meeting, on the 25th, at Camp Medical with noonday lunch. Dr. Ned Smith, of Tulsa, delivered a very scholarly address on "What the General Practitioner should know of Psycho-analysis." A large attendance was present and an enjoyable time had. The Society will hold its next meeting at Camp Medical the second Wednesday in September.

DR. GENERAL PINNELL, and wife. while driving across Missouri, in the early part of June on a trip to meet their son who was in school in Illinois, sustained severe injuries as a result of the front axle of their car breaking. They were going quite fast and were catapulted over into a nearby corn field. Both the General and Mrs. Pinnell sustained broken ribs and severe bruises but they are able to be about, with the assistance of crutches.

SOUTHEASTERN OKLAHOMA MEDICAL ASSOCIATION met June 19, in McAlester. Medical and sugical clinics were held at the Albert Pike Hospital and the state penitentiary hospital in the forenoon. The following program was rendered:

The Differential Diagnosis of Some of the Contagious and Infectious Diseases, Dr. J. B. Clark, Coalgate, Okla.

Diagnosis of Inflammatory Diseases of the Anterior Segment of the Eye Ball, Dr. J. E. Davis, McAlester. Okla.

The Rational Treatment of Carcinoma of the Cervix Uteri, Dr. Wendell Long, Oklahoma City, Okla.

Fractures of Femur in Children, Dr. L. S. Willour, McAlester, Okla.

Subject Unannounced, Dr. J. M. Harris, Wilburton, Okla.

Dinner 6:30 P. M. American Legion Building

Invocation, Dr. A. A. Duncan, Pastor, First Baptist Church, McAlester, Okla.

Welcome Address, Hon. Frank Watson, County Attorney, Pittsburg County, McAlester, Okla.

Response to Welcome Address, Dr. G. C. Gardner, Atoka, Okla.

Address, Dr. Chas. M. Rosser, Physician, Lecturer and Entertainer, Dallas, Texas.

TUBERCULOSIS

Edited By
L. J. Moorman, M.D. and Floyd Moorman, M.D.
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A Review of Factors Involved in the Decline of Tuberculosis, W. P. Shepard, M.D.: J. A. M. A., Vol 94, No. 10, March 8, 1930., San Francisco, California.

The decline of tuberculosis has been marked and persistent in the United States for more than fifty years. For purposes of discussion, the writer proposes the following hypotheses:

1. Tuberculization: Other things being equal, the tuberculosis death rate will vary directly with the number and virulence of tubercle bacilli and the number of susceptible persons in a population.

2. Physical Well Being: Other things being equal, the tuberculosis death rate will vary inversely with the degree of physical well being of individuals in a population.

3. Medical and Public Health Facilities: Other things being equal, the tuberculosis death rate will vary inversely with the amount of employment of good medical and public health facilities in a population.

By tuberculization is meant the degree of ubiquity of tuberculous infection, not alone tuberculous disease; the term may be considered synonymous with tuberculosis immunization. The number of tubercle bacilli present will obviously depend on the presence of uncontrolled human or bovine cases, recognized or unrecognized. Autopsy reports and tuberculin tests of large numbers tend to show that tuberculization is neither a racial nor a geographical phenomenon but depends solely on opportunities for infection. This recalls the law of Romer: "Where tuberculosis is a rare disease, the cases that occur will be acute and fatal. Where the disease is common, the types will be chronic and relatively benign. In other words, contact with tuberculosis affords a certain protection against it." Thus, a new born infant, in contact with a consumptive mother, is suddenly exposed to massive infection and is likely to succumb to an acute, generalized tuberculosis. Escaping such a fate, the child meets its first infection by picking up now and then a tubercle bacillus from some of the countless articles with which it comes in contact, and, provided that the initial infection is not too large, acquires a gradual immunization.

The extreme rarity of infection among natives in Africa is attributed by Calmette to their isolation rather than to immunity because, once introduced, the disease is fatal among them. It would indicate that the salvation of a population lies either in a complete absence of tubercle bacilli or a complete optimal tuberculization with its resulting immunizaton.

By physical well being is meant: Freedom from hunger, exposure, undue physical stress, pathologic fatigue, industrial pulmonary hazards, and organic disease. A few examples of lack of physical well being are pauperism, inadequate housing, employment involving extreme physical strain.

Periods of special physical stress are the postadolescent period, pregnancy, parturition and lactation and acute illnesses such as pneumonia and influenza. Alcoholism is a definite factor contributing to a high tuberculosis death rate.

By employment of good medical and public health facilities is meant: competent medical care within the reach of all classes, the possession of enough knowledge by all classes to cause prompt and continuous employment of such facilities; early detection and proper isolation of infectious cases and kuowledge of good personal hygiene.

Research in Tuberculosis, Kendall Emerson, M.D.: J. A. M. A., Vol 94, No 11, March 15, 1930.

The Medical Research Committee of the National Tuberculosis Association is pursuing investigations in three important fields: the study of light, a study of the history of infants in tuberculosis and nontuberculous environments, and studies in the biochemical analysis of the tubercle and other acid-fast bacilli with the effect of their various components on the live animal cell.

Laboratory work on the tubercle bacillus started immediately after the discovery of the micro-organism by Robert Koch. In 1921, it was realized that there could be little hope of further progress in our knowledge of the disease and little change in treatment until investigation of the bacillus itself was vastly extended along chemical and biologic lines. For this purpose, the Medical Research Committee adopted a cooperative plan whereby a considerable number of outstanding specialists were to carry on productive investigations, the results to be correlated by frequent conferences. Complete standardization of products is achieved by a synthetic medium for the growth of the bacteria.

Up to the present time, five varieties of bacilli have been thus produced and are being subjected to analysis and test—the human tubercle bacillus, (H37), the bovine, avian, nonspecific timothy grass and lepra bacilli.

So far as the comparative analysis has progressed, certain facts have been revealed.

1. A specific reaction has been found from the introduction into a normal animal of the pure protein substance isolated both from the bacillus itself and from the medium on which it was grown.

2. An entirely different result has been found from the introduction of a fat fraction from the bacillus into a normal animal. This fraction is a stimulus to the growth of one of the cells of the body, the monocyte in which the tubercle bacillus grows.

3. The polysaccharides of the human tubercle bacillus have been shown to possess a killing power for tuberculous animals and, as every tuberculin contains these polysaccharides, this fact becomes of great importance.

UROLOGY and SYPHILOLOGY

Edited by Rex Bolend, B.S., M.D
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Jaundice Associated with Antisyphilitic Therapy. L. Lortat-Jacob and J. Roberti, Bull. Soc. franc. de dermat et syph., 35:865, 1928.

The recent article of Ravaut on this subject has occasioned this article, a brief record of twenty-

four cases of icterus observed by the authors in the past three years. Of these twenty-four cases there were only two non-syphilitic ones; one of the latter had pemphigus, and the other was given neoarsphenamine prophylactically. The authors state that this experience showed that arsphenamines were not the only antisyphilitic remedy that might provoke jaundice. It was concluded that no relation existed between the dose of arsphenamine and the development of icterus, and that there is no relation of the status of the Wassermann reaction to the development of jaundice.

Latent Biliary Retention in Syphilis. Babalian, Bull. Soc. franc. de dermat. et syph., 35:870, 1928.

The author has investigated latent biliary retention in various stages of syphilis and under different conditions. He states that 50 per cent of primary cases show evidence of biliary retention (subicteric jaundice), in a moderate and fleeting form, that it is more evident in the florid secondary period, and was present in 90 per cent of syphilitic patients. There is an increase of urobilin and biliary salts in many cases of syphilis; its frequency is less in later stages of the disease (from 12 to 50 per cent). In the early stage, latent biliary retention is a consequence of hepatitis with hyperfunction of the organ, while in later stages it is probably the result of cirrhotic change. Studies of the author on this question lead him to see in latent biliary retention a condition resulting from several factors: therapeutic shock, hepatic Herxheimer reaction and a special toxic action on the erythrocytes.

Jaundice Associated with Antisyphilitic Treatment. Milian, Lathe and Delarue, Bull. Soc. franc. de dermat. et syph. 25: 873, 1928.

The recent article of Ravaut on this subject has also occasioned this communication. Milian and his collaborators have first recalled the historical aspects of the question (only the French literature is mentioned) and shown the varied opinions that have existed on this subject.

One hundred nineteen cases of icterus have been seen, in Milian's service, fourteen of which were not given antisyphilitic medication. Ten of the cases were associated with a roseola and neoarsphenamine was administered with rapid disappearance of the jaundice. None showed any toxic phenomena. Of the five deaths in the whole series of cases, only one might reasonably have been attributed to arsenical therapy. Sixty-four cases appeared during the secondary stage, thirty-eight during the tertiary stage and three in heredosyphilitic patients, the author states.

The number of cases of icterus which appeared during the treatment with mercury and bismuth was greater than those with arspehnamine. There was evidence of recurrence rather than medicinal intoxication when the cases of post-therapeutic icterus appeared most frequently from thirty to sixty days after discontinuation of treatment. Of the 105 cases of jaundice in which antisyphilitic treatment had been given, 79 were attributed to syphilis; the others to toxic or infectious agents. As to treatment when icterus occured, Milian has always continued arsphenamine medication in those cases in which syphilis was present. The medication was perfectly agreeable to sixty of the patients; but the remainder were not given the treatment when extraneous causes appeared, with the exception of four in whom definite therapeutic contraindications intervened.

These figures show definitely the syphilitic pathogenesis of the icterus, and confirm the opinion which Milian has always championed. There is a definite distinction between icterus occurring "inter-therapeutically" and that developing post-therapeutically. The latter may be compared to neuro-recurrences, but the former are not so easily interpreted; they are probably instances of arsenic resistant organisms. The criticism that the jaundice may have disappeared is refuted by Milian's experience. For the probable instance of arsenic resistant organism, a change of antisyphilitic remedies is perhaps advisable, but certainly not a renunciation of treatment.

The Pathogenesis and Treatment of "Para-arsenical" Icterus. A Sezary, Bull. Soc. franc. de dermat. et syph. 35: 883, 1928.

Sezary has observed 24 cases of icterus in 1600 syphilitic patients since 1921. His method of solving the much discussed question of jaundice is by detailed observation and records of these cases. He has always stopped arsenical and other antisyphilitic treatment when icterus has occurred in his patients; there has always been a rapid and complete cure of the complication. His treatment depends on circumstances; if active syphilis is present, mercury and bismuth are substituted for arsphenamine; if there is no syphilitic activity, all antisyphilitc treatment is stopped until jaundice has disappeared; then treatment is resumed with mercury and bismuth followed by the cautious administration of an arsenical preparation.

Results of Radiotherapy of the Sympathetic System in Supramalleolar Erythrocyanosis, Acro-Asphyxia, Raynaud's Disease and Crural Ulcers. J. Gouin and A. Vienvenue, Bull. Soc. franc de dermat. et syph. 35:924, 1928.

The authors originated the method of spinal irradiation for lichen planus and applied it to the foregoing conditions. When the roentgen rays are applied to the large vascular areas (Scarpa's triangle, axillae), over the vertebral column, and to a cutaneous surface, they have noted an influence on the number of circulating leukocytes. The author states that the hematologic change is similar to that noted after periarterial sympathetic function. In the disease mentioned, they gave filtered (over the vascular trunks) and vertebral radiation.

Their results were good, comparable to those obtained with periarterial sympathectomy. Raynaud's disease, in two cases were cured and rapid cicatrization of atonic ulcers of the legs was effected. A marked improvement and cure was reported for all of the twenty-two patients with supra-malleolar erythrocyanosis, the authors write.

Contribution to Our Knowledge of Trichoepithelioma. A. Fuhiwara, Japan J. Dermat. & Urol. 27:1 (Oct.) 1927.

The author reports the case of a tumor the size of a hazelnut in which the condition was

diagnosed clinically as atheroma. When it was sectioned, there could be seen many epithelial strands detached from the wall of an atheroma and arranged in interstices. In these strands were many horny cysts, which by following through serial section, he was able to demonstrate that the horn in these cysts was gradually transformed into a colloid-like material. The skin in this region was entirely without sweat and sebaceous glands and the arrector pili muscles.

Hematoporphyria Congenita. K. Matsuoka, Japan J. Dermat. & Urol. 28:I (June) 1928.

A report of the author on three new cases of hematoporphyria congenita makes a total of nineteen in the literature. A vesicular eruption with serous content appeared on the face and the dorsum of the hands and feet, in his cases early in life. This eruption healed by drying up of the crusts, and was followed by atrophy, superficial scarring and hyerpigmentation. In two cases in which the urine was the color of port wine, the spleen could be easily seen. In these cases the hemoglobin and red cell content were 20 per cent below normal. An eruption appeared in the third case; it disappeared when the patients were kept indoors and protected from the sunlight.

The author's conclusion is that these patients are sensitive to something in the sun's rays which causes a gradual hemolysis, resulting in an enlargement of the spleen. Therefore, the urine containing porphyrin was exposed to extensive spectral investigations.

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ORTHOPAEDIC SURGERY

Edited by Earl D. McBride, M.D
717 North Robinson Street, Oklahoma City.

Generalized Osteitis Fibrosa. I. Seth Hirsch. Radiology, XII, 505 and XIII, 44, June and July, 1929.

Osteitis fibrosa is a disease with polymorphous manifestations. Leontiasis ossea, the cyst, the giant-cell tumor, and simple fibro-osteoid changes, any or all may occur in a generalized osteitis fibrosa.

X-ray examination permits study of various stages in the same individual. Raget called the disease osteitis deformans; von Recklinghausen, osteitis fibrosa. The latter grouped osteitis deformans and osteitis fibrosa with rickets, and osteomalacia under the general heading of malacia, and also included osteogenesis imperfecta. The distinction between these is a relative and not a specific one.

In all, there is softening, produced by resorption, and substitution of fibro-osteoid tissue, the end result depending upon the nature and intensity of the reconstructive effort. Typical Paget's it a disease of late life; von Recklinghausen's of early life; but no hard and fast line can be drawn between them. The lesions may involve part of a bone, an entire bone, or several bones.

The roentgen differentiation between a giant-cell tumor and a true sarcome is frequently impossible. Involvement of the bones of the hands and feet, especially in the first three matacarpals, occurs in nearly every case. The lesions are usually small but distinctive.

While the age of incidence of Paget's disease is usually the third or fourth decade of life, numerous cases in the second decade have been reported. The disease develops very slowly and subjective symptoms appear comparatively late in its course. The early stages have few or no subjective symptoms.

The evidence from the cases reported by the author and from numerous cases in the literature points to the frequent commencement of the disease in childhood, at times in its very early years. There seems to be a strong hereditary factor in many cases. The changes occurring in childhood are not the typical hyperostotic metaplastic malacia seen in adults, but the hyperplastic types of malacia.

The author reports: (1) a case studied by radiograms over a period of sixteen years; (2) three children of the same family showing the early stages of the disease; (3) a case showing an association of metaplastic and hyperplastic malacia, studied in several hospitals over a period of years, the hyperplastic process manifesting itself by an excess of new subperiosteal bone production in irregular longitudinal bands, and the metaplastic process by the bone expansion, cyst formation and by the malacia; (4) a case of cystic metaplastic malacia with hyperostotic changes, in an infant; (5) a case of cyst and tumor forming metaplastic malacia in a female aged twenty-two years; and (6) two cases of cystic metaplastic malacia of the von Mikulicz type.

The author concludes that the period of onset of generalized osteitis fibrosa has been brought back to the earliest period of life; that the various phases give definite roentgen findings; that it is justifiable to infer that there are marked hereditary tendencies, and that these are congenital hereditary diseases.

The article contains sixty-eight fine illustrations, reproductions of photographs and radiographs.

Spondylitis Deformans Und Trauma. (Spondylitis and Trauma). Gaugele. Ztschr. f. orthop. Chir., LI, 74, 1929.

Gaugele has studied a great many roentgenograms of patients with fracture or other injuries to the spinal column and discusses the important question as to whether or not arthritis or spondylitis deformans may be caused by traumatism. He comes to the following conclusions: The origin of spondylitis deformans from traumatism has not yet been proved. It is entirely impossible that a slight trauma may cause such changes. Even after severe fractures in younger, as well as older persons, the typical changes of spondylitis deformans generally are not seen. The development of the typical changes requires years and not weeks. But it may be acknowledged that the symptoms of the pre-existing spondylitis, especially the pain, may be markedly aggravated by the trauma.

Osgood-Schlatter's Disease. Robert B. Taft. Radiology, XII, 414, May, 1929.

The author reports eight new cases, and one old one. He believes the disease much more common than the number of reported cases would seem to indicate. It is far more frequent in boys.

Being an epiphysitis, it can begin only between the time of appearance of the epiphysis and of its final union with the tibia, viz., between the ages of twelve and twenty-one.

There is usually the history of a slight injury, followed by continuous and severe pain, extreme tenderness, and some swelling, redness, and local heat.

The etiology is unknown, and the author states that the pathology is likewise unknown, no record being found of any microscopic study. He believes that the condition is purely traumatic in origin, although the trauma is often slight.

A case studied radiographically seventeen years after its onset showed marked increase of bone production at the site of the old lesion.

In most cases simple splinting is efficient treatment. In some, a curettage of the tubercle or a bone peg, to anchor the patellar ligament, has been necessary.

Thoughts on the "Early Case" of Tuberculosis. Miles J. Breuer, Amer. Rv. Tb., Vol. 21, Jan. 1930.

The author attributes the difficulty in diagnosing early cases of tuberculosis to the unwillingness of patients to accept such a diagnosis when there are no clinical symptoms from the lungs, and to the fact that instruction in modern knowledge of tuberculosis was not available during their student days to the majority of men now in practice.

The word "tuberculosis" is too closely associated in the mind of the public with the medical professions conception of that disease forty years ago—i.e., cachexia and fever, a hollow cough, germs in the sputum, hopelessness. They refuse to accept the rational scientific conception of tuberculosis and its comparatively simple cure and go from one physician to another in the hope of finding a more pleasing diagnosis, consequently allowing cases in many instances to develop to a stage at which adequate cure is impossible.

Breuer believes that with circumstantial evidence present, tuberculosis should be the first consideration, not the last. The indisposed individual, the chronic gastrointestinal case, the underweight, the vague and chronic complainer should be considered primarily as possible cases of tuberculosis. Not until these cases are recognized and dealt with properly will the tuberculosis morbidity be lowered.

Comparative Radiographic and Anatomical Studies of Intestinal Tuberculosis. By M. Maxim Steinbach, Am. Rv. Tb., Vol. 21, Jan. 1930.

Tuberculous ulceration of the intestines is usually secondary to pulmonary tuberculosis, and, as a rule, a terminal phenomenon in the course of chronic phthisis. Clinicians find the diagnosis of intestinal tuberculosis very difficult; nearly all symptoms and signs may fail even in the presence of severe intestinal lesions.

Stierlin made much progress with the use of the roentgenograph. His method of examination is simple: two glasses of a liquid bismuth meal are given, and roentgenographs taken after 6, 8 and 24 hours. The classical Stierlin sign is the failure to visualize the caecum and ascending colon, whereas the terminal ileum and the transverse colon are filled. He emphasizes the importance of loss of haustrations, the irritability of the affected parts and the rapid emptying of the entire large intestine within 24 hours. Of 7 cases described by Stierlin, 6 were correctly diagnosed as ileocaecal tuberculosis as proved by surgical operation. However, reviewers of Stierlin's work state that Stierlin's sign is by no means pathognomonic of ileocaecal tuberculosis, being found also in cancer. Pirie advanced the theory, as proved by roentgenographic study, that in each case of tuberculosis caecum, the caecum never filled up with the barium meal.

At Montefiore Hospital, 67 cases were studied, clinically, roentgenologically and at autopsy. The technique of Stierlin and Brown and Sampson was used. These cases were divided into two main groups: (I) those in which the roentgenological findings coincided with autopsy findings, which comprises 32 cases; and (II) those in which the roentgenological findings were at variance with autopsy findings, which contains 35 cases. Group I contains 20 cases positive roentgenologically and at autopsy; 5 suspicious roentgenologically for positive findings and at autopsy positive; 7 roentgenologically negative and negative at autopsy. Group II contains 3 cases with roentgen pictures of intestinal tuberculosis, but at necropsy no tuberculous ulcerations were found; 18 cases with roentgen pictures that were normal, but at necropsy more or less ulceration in the intestines was found; 6 cases, which at necropsy showed tuberculous ulceration of the intestines, but the roentgen findings were indefinite; 4 cases in which the roentgen findings were indefinite, but at necropsy the intestines were found to be unaffected; 4 cases which indicated tuberculous colitis, but autopsy revealed the lesions to be located solely in the small intestines.

On the basis of 67 cases, is was concluded that the roentgenological signs usually considered diagnostic of this condition were highly unreliable in over 52 per cent of cases studied by the author.

BOOK REVIEWS

Obstetrics For Nurses. By Charles B. Reed, M. D., F. A. C. S. Professor of Obstetrics, Northwestern University Medical School; Chief Obstetrician Wesley Memorial Hospital, Chicago, and Charlotte L. Gregory, R. N., B. S., M. D., Adjunct in Obstetrics at Wesley Memorial Hospital; Clinical Assistant in Obstetrics at Northwestern University Medical School, Chicago. 144 illustrations, with 2 colored plates. Third edition, Cloth 399 pages, Price $3.00. C. V. Mosby Company, St. Louis.

Next to operating techinque perhaps there is nothing so important to the nurse as a thorough knowledge of obstetrics, for as a rule, the nurse is on the ground and in full charge of the case long before the physician arrives, and after his departure. It follows that the normal and abnormal should be well in her mind at all times, often spontaneous normal delivery occurs with only the nurse present. Under such condition an intelligent nurse is the mainstay of the patient, the physican and the family. This little volume contains 25 chapters touching upon practically every phase of obstetrics. It is finely illustrated and so plainly written that anyone of average intelli-

gence should have no trouble in mastering it's contents.

Manual of Physical and Clinical Diagnosis. By Dr. Otto Seifert (Late Professor of Medicine, Wuerzburg) and Dr. Friedrich Mueller (Professor of Medicine, II Med. Clinic, Munich). Authorized translation from the twenty-fourth German edition by E. Cowles Andrus, M. D., Associate in Medicine, Johns Hopkins University, Associate Physician, Johns Hopkins Hospital. 140 illustrations and 3 colored inserts. Leather, 543 pages, Price $6.00. J. B. Lippincott Company, Philadelphia.

The many German editions of this compact work testify to it's worthiness. The little volume is of that convenient size which may be made a companion by the physician who has a few odd minutes or hours as the case may be, to refresh his memory and information. In addition to eleven chapters it contains an appendix, which includes a table, summary of symptoms and therapy of acute intoxications, mineral springs and baths, drugs and dosage and a table of troy and equivalents.

Infant Nutrition. A text book of infant feeding for students and practitioners of medicine. By Williams McKim Marriott, B. S., M. D., Professor of Pediatrics, Washington University School of Medicine; Physician in Chief, St. Louis Children's Hospital, St. Louis. 372 pages, Price $5.50. C. V. Mosby Company, St. Louis.

The nutritional disturbances of infants and children have rightly assumed enormous importance. This has been brought about by scientific study of the physiology, intestinal flora, and pathology of infants and children. Regardless of minor disagreements the scientific pediatrician has arrived at some very thorough agreement as to the diagnosis, treatment and procedure of the helpless infant. Cases formerly regarded as hopeless are now successfully handled by the skilled pediatrician. Certainly scientific feeding is a life saving task. Very desperate cases are quickly bettered and apparantly snatched from an earlly grave by proper feeding. Professor Marriott is one of the leading authorities of the country on pediatrics. His work will be received with favor by those having the problems of infant life confronting them.

Minor Surgery. By Arthur E. Hertzler, M. D., Chief Surgeon, Halstead Hospital, and Victor E. Chesky, M. D., Chief Resident Surgeon, Halstead Hospital. Cloth, 602 pages, Price $10.00. C. V. Mosby, St. Louis.

As we have noted before everyone, whether surgeon or physician, is called upon to do more or less of what is known as "minor surgery". It was then called to your attention that minor surgery, if neglected or if improperly attended to, could result in prolonged morbidity and at times tragic mortality, and such unnecessary terminations might be avoided by the physician thoroughly understanding the many little pitfalls brought about by what is covered by the word minor. This second edition by Hertzler and Chesky should be acquired by every practitioner who wishes to keep himself informed.

The Normal Diet. A simple statement of the fundamental principles of diet for the mutual use of physician and patient, by W. D. Sansum, M. S., M. D., F. C. P., Director of Potter Metabolic Clinic, Department of Metabolism, Santa Barbara Cottage Hospital, Santa Barbara, Calif. 134 pages, Cloth, Price $1.50. C. V. Mosby, St. Louis.

The question as to what is the best diet has assumed, in the last few yers, a prominent place in the stage of publicity. Food faddists have undoubtedly done a great deal of damage to thousands of people by causing them to go upon dangerous diets. Dr. Sansum considers the requirements of the body under various conditions, the acidoses and gives several pages of menus fitting the physical needs under certain conditions.

Surgical Diagnosis. Volume III and Separate Index Volume, completing the new work by 42 American Authors. Edited by Evarts Ambrose Graham, M. D., Professor of Surgery, Washington University Medical School. Three Octavo volumes, totaling 2750 pages, containing 1250 illustrations, and Separate Index Volume. Philadelphia and London: W. B. Saunders Company, 1930. Cloth, $35.00 a set.

This third volume and index completes what is already recognized as a very fine, thorough and detailed work on Surgical Diagnosis. As noted before the entire work is made up from contributions of many of the leading surgeons of the United States. The work is profusely illustrated, so far as is noted, all from originals. There are some beautiful colored plates all which lend much to the clarification of the text. The work should be in the hands of every surgeon and student of medicine

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The Collected Papers of The Mayo Clinic and The Mayo Foundation for 1929, Volume XXI. Edited by Mrs. M. H. Mellish, Richard M. Hewitt, M. D., and Mildred A. Felker, B. S. Octavo volume of 1197 pages with 279 illustrations. Philadelphia and London: W. B. Saunders Company, 1930. Cloth, $13.00 net.

This is the annual volume by the Mayo Clinic and the Mayo Foundation by the division of publication of those organizations. Of course it can only partially reflect a tremendous amount of work, observations, findings and results of one of the world's great medical centers. 471 papers were used from which to make selection; ninety reprinted, twenty-three abridged, sixty-eight abstracted and two hundred ninety given reference. A volume of this type belongs not only to the surgeon but in the library of every practitioner of medicine for it naturally covers many medical as well as surgical matters.

THE SURGICAL CLINICS OF NORTH AMERICA. (Issued serially, one number every other month). Volume 10. No. 2. (Chicago Number April 1930). 252 pages with 72 illustrations. Per clinic year (February 1930 to December 1930). Paper, $12.00; Cloth, $16.00. Philadelphia and London.

This issue of the Surgical Clinics of North America is very valuable on account of its ex-

treme practicability. Among the notable contributors are those from the clinic of Dr. Arthur Dean on "Gallstone Disease" "Congenital Pyloric Stenosis" "Appendicitis" "Double Undescended Testes" and "Carcinoma of the Breast." Kellogg Speed presents "Tumor of the Chest Wall' and "Small Joint Infections;" Percival Baily and Paul C. Bucy, "Tumors of the Spinal Canal;" David C. Straus and Henry H. Rubin, present an "Analysis of One Hundred Consecutive Thyroidectomies for Goiter with Hyperthyroidism;" Golder L. McWhorter presents "Three Cases of Ligation of both the Femoral Artery and Vein in Thrombo-Angiitis Obliterans;" while George M. Curtis presents the problem of "Intrathoracic Goiter;" Fredrick Christopher presents "Ulcerative Arteritis, a Complication of Ulcerative Colitis;" "Fracture of the Second Cervical Vertebra;" "Necrosis of Ileum Following Pelvic Inflammatory Disease;" "Repair of Hepatic Duct" and "Paraffin Injection as an Aid to Excision of a Lateral Cervical Fistula." Bernard Portis presents "A Case of Coronary Thrombosis Simulating an Acute Surgical Condition of the Abdomen," as well as "Five cases of Fulminating Appendicitis in Children with a Low Leukocyte Count." Edwin M. Miller presents "Two Cases of Strangulated Hernia Due to Ruptured Appendix" "Operative Repair of Supracondylar Fracture of the Humerus in a Child." C. B. Higgins presents "Four Cases of Hydronephrosis." Chester C. Guy presents "Paget's Disease: It's Differentiation from Metastatic Carcinomatosis of Bone." While Wilhelm C. Heuper and Lester E. Garrison presents " Surgical Aspect of Agranulocytosis."

This does not entirely describe all of the offerings of this issue but the reader may be assured that this is a very interesting volume and well up to the high standard maintained by these issues.

TO GOLF OR NOT TO GOLF?

The problem of physical exercise for persons who are under medical care as well as for those in health is engrossing the attention of physicians more than ever. The need of recreation is stressed and the provision for it has become a feature of the modern program for a well ordered life. For those who spend a large part of their waking hours in physical toil there is little occasion to proclaim the alleged virtues of muscular exercise. Among persons who cannot properly be classed as "workers" from the standpoint of muscular performance, the value of physical activity, it is said, is not duly appreciated. The gospel of exercise has long been preached, particularly to those engaged in sedentary occupations, often without any regard to possible limitations of the physiologic mechanism that is involved. The implication that exuberant health is dependent on violent exercise needs to be carefully examined, particularly with respect to the universal physiologic basis of the expected hygienic benefits.

The value of exercise is not the development of large muscles or in accomplishing athletic feats. The attainment of physical poise, symmetry of form and harmonious grace, and the futherance of proper activity of tissue cells and organs and the elimination of waste products, are the chief ends sought. In fact, good health as a whole, and not a highly developed muscular system, should be the objective of exercise.

Golf has attained tremendous prominence in this country during the present century. The hold of the game on our population is attested by the growing number of municipally owned golf courses. Medical associations now demand an opportunity for their nembers to "use their clubs" during the intervals between scientific sessions and clinical demonstrations. Little wonder that the untutored layman accepts this as prima facie evidence for the wholesomeness of the outdoor game! Yet, as far as disputable evidence is concerned, one may ask with justification: "What is the real hygienic significance of golf?"

The first dilemma is that of the age factor. As a recent writer [1] has remarked, on one side is the opinion that golf is a game for old persons and that a man should play golf only when he is unable to participate in other kinds of sports. The fact that retired business men are so often pictured as playing golf has helped much in developing this impression. On the other side, it is asserted that a "real game" can be played only by young people, and as proof of this it is shown that the "champions" are young people. Obviously, other criteria than age must be established before the controversy about hygienic recreation and continued effort can be profitably discussed. Accordingly, Karpovich of the International Y. M. C. A. College at Springfield, Mass., has made a series of observations under the auspices of the Burke Relief Foundation. The major effort was directed to finding the reaction of the heart and blood vessels to the game among golfers of diverse ages, different sex and various coditions of health among whom were some patients with heart disease. Weight, heart rate and blood pressure were taken in the reclining and the standing positions. Schneider's cardiovascular test was given before and after the game. There was usually a decrease in weight after the game, ranging from one to four pounds. This decrease was not a true loss because subjects were weighed in their clothes both times. Patients who did not show change in weight had drunk plenty of water. Karpovich points out that in healthy persons the heart rate increases with metabolism. In general the heart returns to normal in a short while, often to subnormal for a short period. His study showed that these observations were true with the well and convalescent golfers. The heart rate and the time needed to return to normal plainly indicated the amount of energy expended. It was shown that women expend less energy in playing than do men. There was no indication that any one overdid the game. The energy spent in playing golf should not be minimized. It is estimated that a person walking at a rate of four miles an hour over a conventional level course of 6,000 yards spends as much energy as he would in lifting himself five times to the top of the highest skyscraper in New York; or, walking with a speed of about two miles an hour, he would spend enough energy to lift himself a little over four times to the top of the same building. As a matter of fact the golf courses are usually located on hilly grounds, and this greatly increases the output of energy necessary to cover the playing distance. To all this the work performed in practice and actual shots and in searching for the ball must be added. And when it comes to searching for lost balls—what a difference!

From the experience gained in the examination of more than a hundred golfers, Karpovich sug-

gests that a too great loss of weight following exercise with a slow return of weight is bad. Lower blood pressure, particularly in the standing position with higher heart rate and a slow return to normal after moderate exercise is an indication of poor condition. Sleeplessness, restlessness, fatigue in the morning and lessened appetite after moderate exercise are indications of poor condition. Abnormal heart or kidney conditions increase the dangers in severe exercise. Moderate exercise cautiously taken will be of advantage. Every one should be cautious about eating too soon after exercise. Persons out of condition should be careful to rest before eating. Patients recovering after some sickness naturally have lower endurance and may collapse even after playing a few holes. Usually they walk and play slowly and it is better to allow them to play not more than thirty minutes on a plain, even course. There is strong evidence that such exercise is beneficial to them. Patients with heart disease with well developed compensation react in the same way as normal persons, and eighteen holes played by some do not seem to have any harmful effect. In the light of such advice the question to play or not to play is one that must be answered separately for every player.—Jour. A. M. A., May 4, 1929.

1. Karpovich, P. V.: A study of Some Physiological Effects of Golf, Am. Phys. Education Rev., November, 1928.

IS BISMUTH ABSORBED?

The roentgenograms made from patients treated with intramuscular (buttocks) injections of bismuth subsalicylate, potassium bismuth tartrate, bismuth sodium tattrate and one unknown salt are presented by Bernhard Erdman, Indianapolis (Journal A. M. A., April 13, 1929). He makes no attempt to evaluate the various bismuth preparations from the clinical standpoint. There is no question, he says, that bismuth favorably influences the blood Wassermann reaction in some patients. There is marked individual idiosyncrasy to the metal, as evidenced by the "blue gums."

ARTHRITIC PAIN IN RELATION TO CHANGES IN WEATHER

Edwin B. Rentschler, Francis R. Vanzant and Leonard G. Rowntree, Rochester, Minn. (Journal A. M. A., June 15, 1929), made a study not to prove the existence of a relationship of arthritic pain to weather change but to determine whether or not such a relationship actually exists. They feel certain that many of their patients with arthritis can, through an increase in the severity of their pain, sense the approach or presence of storms. In a group of 367 patients studied for a year there was a positive relationship for 72 per cent of the time between the curve of pain and that of barometric pressure. For 21 per cent of the time the relation was equally definite, but as one line went up the other went down. In only 7 per cent of the time was a relationship undemonstrable. For more than 90 per cent of the time there was a relation between the presence of storms and an increase of pain. Observations on humidity, temperature and atmospheric electricity were inconclusive, although it is still possible that these agents working together have some effect.

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